TRANSACTIONS

OF THE

SECOND ANNUAL CONFERENCE OF STATE AND TERRITORIAL HEALTH OFFICERS

WITH THE

UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE

WASHINGTON, JUNE 3, 1904

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CONTENTS.

Page.

Letter of transmittal to the Secretary of the Treasury 5
Letter calling Second Annual Conference 7
Assembling of the conference—Calling the roll and delegates present 9
Opening remarks of the Surgeon-General 10
Announcement of general committees 11
Announcement of special committees 11
Roll call by States and reports of committees 12
Remarks by Doctor Foster on plague situation in San Francisco and discussion by Delegates Hurty and Lee 12
Reading of letter from Hon. Frank Wells expressing satisfaction 13
Resolution of confidence in handling of plague situation in San Francisco 4

REMARKS BY DELEGATES IN ATTENDANCE.

California: Doctor Foster expresses appreciation 14
Colorado: Doctor Cooper submits report of committee on tuberculosis 14
Connecticut: Doctor Lindsley speaks of epidemic of cerebro-spinal meningitis in Hartford in April 14
District of Columbia: Doctor Fowler notifies conference of inability of District Health Officer Woodward to attend 14
Florida: Doctor Porter states that the report of committee on yellow fever is not yet ready; speaks of sanitary conditions in Florida, and need of tuberculosis sanatoria 14
Hawaii:
    Doctor Cooper presents report on leprosy 14
    Surgeon-General Wyman speaks of establishment of national leprosarium 15
Indiana: Doctor Hurty reports satisfactory progress in collection of morbidity and mortality statistics 15
Iowa: Doctor Powers reports on sanitary conditions and collection of vital statistics 15
Louisiana: Doctor Souchon reports on good health and sanitary conditions 15
Maryland: Doctor Fulton reports progress in registration of vital statistics 15
Michigan: Doctor Baker presents report of committee on morbidity and mortality statistics 16
Minnesota:
    Doctor Bracken reports that tuberculosis is to be a reportable disease 16
    Discussion of Delegates Bracken and Lindsley as to disinfection of premises by embalmers 16
Montana: Doctor Tuttle reports progress in collection of vital statistics and describes "spotted fever" 16
New Jersey: Reports a recent act of legislature to establish an eligible list of trained employees 16

Page.
North Carolina: Doctor Lewis speaks of presence of hook-worm disease in State, also prevalence of smallpox ... 17
North Dakota: Doctor Healey reports that operations of board are hampered by lack of funds ... 17
Ohio: Doctor Probst reports outbreaks of typhoid and necessity of sewage plants ... 17
Pennsylvania: Doctor Lee states that an efficient vital-statistics law is lacking; smallpox, typhoid, and goiter prevalent ... 17
Rhode Island: Doctor Swarts reports establishment of State leprosarium for tuberculosis ... 17
Texas: Doctor Tabor expresses appreciation of people of Texas of work of the Public Health and Marine-Hospital Service in yellow-fever epidemic work ... 17
Utah: Doctor Bascom speaks of sanitary work ... 17
Vermont: Doctor Caverley reports on smallpox, tuberculosis, measles, and whooping cough ... 18
Adjournment of conference by chairman, and delegates escorted to the Hygenic Laboratory ... 18

REMARKS IN EXTENSO FURNISHED BY REQUEST.

California: Remarks by Dr. N. K. Foster, secretary State board of health 19
Colorado: Report by Dr. C. E. Cooper, secretary State board of health ... 21
Connecticut: Remarks by Dr. C. A. Lindsley, secretary State board of health ... 22
District of Columbia: Report of Dr. W. C. Fowler, deputy health officer ... 23
Florida: Remarks by Dr. Joseph Y. Porter, State health officer ... 24
Indiana: Remarks by Dr. J. N. Hurty, secretary State board of health ... 26
Louisiana: Report of Dr. Edmund Souchon, president State board of health ... 27
Montana: Remarks by Dr. T. D. Tuttle, secretary State board of health ... 27
North Carolina: Remarks by Dr. Richard H. Lewis, secretary State board of health ... 28
North Dakota: Remarks by Dr. H. H. Healy, secretary State board of health ... 29
Pennsylvania: Remarks by Dr. Benjamin Lee, secretary State board of health ... 29
Rhode Island: Remarks by Dr. Gardner T. Swarts, secretary State board of health ... 31
Utah: Remarks by Dr. F. S. Bascom, president State board of health ... 31
Vermont: Remarks by Dr. C. S. Caverley, president State board of health ... 32

REPORTS OF COMMITTEES.

Appendix A.—Report on plague, by Dr. N. K. Foster ... 35
Appendix B.—Report on tuberculosis, by Dr. C. E. Cooper, Colorado ... 45
Appendix C.—Prevention and restriction of spread of epidemic diseases, by J. N. Hurty ... 53
Appendix D.—Report on yellow fever, by Dr. Edmond Souchon ... 57
Appendix E.—Report on morbidity and mortality statistics, by Drs. Henry B. Baker, Gardner T. Swarts, and H. M. Bracken, committee ... 67
Appendix F.—Report on leprosy, by Dr. C. B. Cooper, Hawaii ... 75

LETTER OF TRANSMITTAL.

Treasury Department,
Public Health and Marine-Hospital Service,
Washington, December 14, 1904.

The Secretary of the Treasury.

Sir: I have the honor to transmit herewith the transactions of the Second Annual Conference of State and Territorial Boards of Health with the Public Health and Marine-Hospital Service, held in Washington, D. C., June 3, 1904, in accordance with section 7, act of Congress approved July 1, 1902.

The transactions of this conference and the reports of committees transmitted are of interest, and it is recommended that they be published for distribution to State boards of health and others to whom they will undoubtedly be of value.

Respectfully,

Walter Wyman,
Surgeon-General.

Approved:
R. B. Armstrong,
Assistant Secretary.

LETTER CALLING SECOND ANNUAL CONFERENCE.

The following letter was addressed to the health authorities of each State, Territory, and the District of Columbia:

Treasury Department,
Public Health and Marine-Hospital Service,
Washington, April 9, 1904.

Dear Sir: I have to inform you that the Second Annual Conference of State Boards of Health with the Public Health and Marine-Hospital Service will be held at the New Willard Hotel, Washington, D. C., on Friday, June 3, 1904, at 10.30 a. m.

In accordance with the terms of the act approved July 1, 1902, each board will be entitled to one representative at this conference.

You are requested to inform the Bureau as early as possible of the name of the delegate who will represent your board.

Respectfully,

Walter Wyman,
Surgeon-General.

TRANSACTIONS.

New Willard Hotel,
Washington, D. C., June 3, 1904.

The conference was called to order at 10.15 a. m. by Surg. Gen. Walter Wyman, of the Public Health and Marine-Hospital Service, the following States and Territories being represented by the delegates whose names appear below. The Public Health and Marine-Hospital Service was represented by Surgeon-General Wyman and Asst. Surg. Gen. H. D. Geddings.

California—Dr. N. K. Foster, secretary State board of health.

Colorado—Dr. C. E. Cooper, secretary State board of health.

Connecticut—Dr. C. A. Lindsley, secretary State board of health.

Delaware—Dr. E. W. Cooper, president State board of health.

District of Columbia—Dr. William C. Fowler, deputy health officer.

Florida—Dr. J. Y. Porter, State health officer.

Hawaii—Dr. Charles B. Cooper, president Territorial board of health.

Indiana—Dr. J. N. Hurty, secretary State board of health.

Iowa—Dr. F. W. Powers, member State board of health.

Louisiana—Dr. Edmond Souchon, president State board of health.

Maryland—Dr. John S. Fulton, secretary State board of health.

Michigan—Dr. H. B. Baker, secretary State board of health.

Minnesota—Dr. H. M. Bracken, secretary State board of health.

Montana—Dr. T. D. Tuttle, secretary State board of health.

New Jersey—Dr. Henry Mitchell, secretary State board of health.

North Carolina—Dr. Richard H. Lewis, secretary State board of health.

North Dakota—Dr. H. H. Healey, secretary State board of health.

Pennsylvania—Dr. Benjamin Lee, secretary State board of health.

Rhode Island—Dr. Gardner T. Swarts, secretary State board of health.

Texas—Dr. George R. Tabor, State health officer.

Utah—Dr. F. S. Bascom, president State board of health.

Vermont—Dr. C. S. Caverley, president State board of health.

Total, 22.

The Surgeon-General, in calling the conference to order, stated that while a permanent working organization had been effected at the first annual conference, in June, 1903, and committees had been appointed in accordance with the plan adopted at that conference, nothing had transpired to render of pressing importance any special conference during the past year, and the present meeting was in compliance with the provisions of the law of 1902 which provides for such a conference at least once in each year.

He stated that the past year had been a particularly busy one for the Public Health and Marine-Hospital Service, and, referring to the yellow fever in Texas, said:

"Since the practical closure of the epidemic (Laredo, fall 1903), which did not become a great one, the activity of the Service and of the State health officials more directly interested has been very great with reference to the possible recrudescence of the fever this summer and fall, and a great amount of work has been done and is still going on. It is work of a character that might not attract your attention, but it is work that is very engrossing, demanding a great deal of attention among those more particularly interested in this form of epidemic.

"The conditions on our Mexican border were such as to make it necessary to have an understanding with the Mexican authorities and to bring about a cooperation and such sanitation of their cities and towns that these should not become a menace to the United States. After conference with the State authorities of Texas and Louisiana, and under the auspices of the State Department, I visited the City of Mexico in the month of January, a time when it was very difficult for me to be absent from here, but the necessity was very great. A satisfactory agreement was effected by interchange of notes declaring exactly what measures should be enforced. Subsequently the health officers of Texas and Louisiana, accompanied by an officer of this Service, themselves visited Mexico on a tour of inspection and conference with various health authorities. The leading members of the Mexican higher officials are very intelligent in this matter of yellow fever. They accept the findings of scientific investigation. The difficulty is in being able to induce their representatives in the small cities and towns to carry out the work to be done. Matters are in such shape now and so much has been done, and nothing alarming having developed so far, we have every reason to hope that we may escape a revisit of the fever. At any rate, with our knowledge of the transmission of yellow fever by the mosquito and insisting upon the covering with mosquito netting of first cases of fever, whether they are known to be yellow fever or not, we think we will be able to stop any spread should cases appear. In the meantime there is a great deal of antimosquito work going on along the lines of railroad on the American side of the Rio Grande. Parties consisting of competent medical officers, with assistants trained in the work, are visiting each town with a view to disinfecting any places where yellow fever was known to exist last year and destroying all *Stegomyia fasciata*."

The Surgeon-General then referred to the items which had been mentioned at last year's conference, improvements to the laboratory, etc., of the Service, the appropriations for which he said had been held up this year in Congress, this being a difficult year to obtain funds for new work; but it was understood that the legislation was only postponed, and was to be put through at the next session. Some things, absolutely necessary, went through—such as an addition of $100,000 to the epidemic fund, improvements to quarantines, etc.—but any general legislation was postponed, among which was a joint resolution for printing a larger edition of the Service publications for distribution among the professional and sanitary experts of the country, which latter will probably be passed at the next session.

He stated that the new Hygienic Laboratory building had been completed and occupied during the year, and was now in running order, with three divisions, namely: (1) Pathology and bacteriology, (2) medical zoology, and (3) pharmacology. The division of chemistry is forming. He extended an invitation to the delegates present to visit the laboratory after the adjournment of the conference.

The Surgeon-General then introduced Asst. Surg. Gen. H. D. Geddings, who announced the following committees, appointed by the Surgeon-General in accordance with the suggestion and resolution adopted at the first annual conference:

GENERAL COMMITTEES.

(*1*) *Scientific research and sanitation.*—Dr. William H. Welch, chairman; Dr. William C. Woodward; Dr. U. O. B. Wingate, secretary.

(*2*) *Prevention and spread of epidemic diseases.*—Dr. N. K. Foster, chairman; Dr. Edmond Souchon; Dr. J. N. Hurty, secretary.

(*3*) *Morbidity and mortality statistics.*—Dr. Henry B. Baker, chairman; Dr. Gardner T. Swarts; Dr. H. M. Bracken, secretary.

(*4*) *State legislation.*—Dr. Benjamin Lee, chairman; Dr. C. O. Probst; Dr. Irving A. Watson, secretary.

(*5*) *Education.*—Dr. C. A. Lindsley, chairman; Dr. Paulus A. Irving; Dr. J. A. Albright, secretary.

SPECIAL COMMITTEES ON DISEASES.

(*1*) *Cholera.*—Dr. Samuel W. Abbott, chairman; Dr. Daniel Lewis; Dr. Andrew C. Smith, secretary.

(*2*) *Yellow fever.*—Dr. Joseph Y. Porter, chairman; Dr. J. F.

Hunter; Dr. George R. Tabor; Dr. William H. Saunders; Dr. T. Grange Simons, secretary.

(*3*) *Plague.*—Dr. F. F. Wesbrook, chairman; Dr. J. S. Fulton; Dr. Andrew C. Smith, secretary.

(*4*) *Smallpox.*—Dr. Henry Mitchell, chairman; Dr. G. E. Young; Dr. S. H. Meyers; Dr. T. B. Beatty; Dr. J. N. McCormack, secretary.

(*5*) *Tuberculosis.*—Dr. C. E. Cooper (Colorado), chairman.

(*6*) *Leprosy.*—Dr. J. C. Nolte, chairman; Dr. Charles B. Cooper (Hawaii); Dr. J. F. Smith (Porto Rico), secretary.

(*7*) *Typhoid fever.*—Dr. William C. Woodward, chairman; Dr. J. A. Egan; Dr. S. W. Abbott; Dr. J. N. Hurty; Dr. J. S. Fulton, secretary.

Dr. Benjamin Lee, of Pennsylvania, chairman of committee on State legislation, stated that he had not received notification of his appointment upon said committee, and therefore had no report to offer. He was informed that notifications had been sent to all who had been so appointed, but that it was not expected that each committee should make a full report at this conference.

REMARKS BY DELEGATES IN ATTENDANCE.

The Surgeon-General stated that the roll would now be called by States, and delegates present might, upon their names being called, make such reports of their committees as were prepared. Those not having reports of this character were invited to give such information in regard to affairs in their respective States as they might deem proper for the information of the conference.

California being the first State called, Dr. N. K. Foster, secretary of the State board of health, stated, in reference to the plague situation in San Francisco, that the promise made last year that all should be kept advised as to the status of affairs there had been fulfilled, and the State authorities and Public Health and Marine-Hospital Service were working together harmoniously and effectively toward the total eradication of the disease. He stated that a thorough cleansing of Chinatown was to be made. Although over one hundred days had elapsed since the discovery of the last case of plague in San Francisco, the work would not abate until Chinatown and other such places had been rendered practically immune to the infection of this disease. He described the methods of disinfecting Chinese quarters and said that the city authorities were as rapidly as possible condemning and destroying the foul dwellings of Chinatown. Diagrams were exhibited by Doctor Foster showing the limitation of the plague infection, and also showing the time of year at which cases most frequently occur. The city is divided into sections, and constant inspections are going on. Steps were taken to discover whence infection came in each case, and frequent inspections of outlying districts made to discover any possible foci outside the city. Every health officer of a city in which there is a Chinatown has been instructed to make autopsies of all suspicious deaths. There have been but three cases where infection outside of the city was suspected, but these were very difficult to trace positively. They were all suspected of having come from Contra Costa County.

Doctor FOSTER spoke of the fumigation of grain ships coming to San Francisco and going therefrom, which resulted in the killing of a large number of rats. He called attention to the important part played by rats in the dissemination of plague, and said that no port was out of danger where infected rats might come. He suggested that it would be a good plan if an international agreement could be effected for the fumigation of all vessels for rats.

Doctor HURTY, of Indiana, asked relative to the methods of making houses rat proof, related by Doctor Foster as being part of the work in Chinatown, San Francisco.

Doctor FOSTER replied that a house could not be made absolutely rat proof, but that they were making them as near as possible so by cement basements. He said the supervisors of San Francisco were considering an ordinance requiring such treatment of all cellars.

Doctor LEE, of Pennsylvania, asked if the Chinese themselves were becoming educated in the matter of plague prevention and were helping the authorities, or whether they were still obstructing the work.

Doctor FOSTER stated that the Chinese were not obstructing so much as they were at one time. He said their cooperation did not depend so much upon education as upon confidence on their part. They will still hide cases, being somewhat afraid of autopsies, but more afraid of changes in their methods of burial, etc.

Surgeon-General WYMAN stated, in regard to Doctor Foster's suggestion as to an international agreement for the destruction of rats on vessels, that the same idea had occurred to him and that the plan had been brought up at the Paris Plague Conference, where Doctor Geddings was a representative of the Service. Surgeon-General Wyman wrote Doctor Geddings with regard to the subject, but the opposition of British and other delegates caused the failure of the project. But disinfection for rats is being carried out at all national quarantine stations, both at home and abroad. Vessels bound for this country are so disinfected at ports of departure as well as at ports of arrival. The Surgeon-General said that he was trying to bring about an international agreement as to this and hoped to accomplish this end.

The SURGEON-GENERAL then stated that a letter had been received from Hon. Frank Wells, president of the Michigan State board of health, in regard to a visit recently made by Mr. Wells to San Francisco, where he inspected the work being done for the eradication of the plague. Assistant Surgeon-General Geddings then read Mr. Wells's letter, which spoke of the satisfaction which he felt in observing the thoroughness of the measures in progress and his gratification at the harmony prevailing.

Doctor BRACKEN, of Minnesota, then moved that a resolution of congratulation, appreciation, and entire confidence of the Conference with regard to the handling of the San Francisco situation be adopted; which motion was carried, and the following resolution adopted:

"*Resolved*, That this Conference expresses its confidence in the present methods in force in California in dealing with plague, and that it extends its congratulations to the national, State, and municipal sanitary authorities for their harmonious action in the control of this disease."

Doctor FOSTER, of California, expressed his appreciation of the action of the Conference in this regard.

Doctor COOPER, of Colorado, chairman of the committee on tuberculosis, submitted the written report of that committee. (Appendix.)

Doctor LINDSLEY, of Connecticut, then spoke of cerebro-spinal meningitis in Hartford in April, with a death rate of 65 per cent. The Public Health and Marine-Hospital Service had been asked to investigate. It occurred among infants and most frequently in the tenement-house districts. He stated also that the laws of Connecticut require the reporting of cases of tuberculosis, and that a tuberculosis experiment hospital has been established by the State.

Dr. WILLIAM C. FOWLER, District of Columbia, stated that Doctor Woodward, health officer, would be unable to attend, and therefore he would represent the District. He said that he would not make any special report, but would join in the discussions later on.

Doctor PORTER, of Florida, chairman of the committee on yellow fever, stated that his committee was not yet ready to make a formal report. He spoke generally of the sanitary conditions in Florida; urged compulsory vaccination as the only means of effectually getting rid of the smallpox pest; referred to the State laboratory, its work, etc., and stated that the legislature had been urged to establish sanatoria for tuberculosis.

Doctor FOWLER asked if Florida furnished supplies to persons detained by reason of suspected smallpox infection.

Doctor PORTER replied that if they were quarantined in their own houses supplies were not furnished, but if they consented to go to the suspect camps they were provided for there.

Doctor COOPER, of Hawaii, of the committee on leprosy, presented a report on leprosy and exhibited photographs of lepers. He stated that leprosy had been first isolated in Hawaii in 1848, since which time there had occurred 5,000 cases.

Surgeon-General WYMAN spoke of efforts being made to establish a national leprosarium in the United States, and stated that a bill to that end would be introduced at the next session of Congress.

Doctor COOPER, of Hawaii, spoke of the strong objection in Hawaii to the use of Molokai for a national leper settlement.

Doctor HURTY, of Indiana, reported a most satisfactory progress in the collection of mortality statistics and very satisfactory collection of morbidity statistics. He reported an increase of cases, but decrease of 20 per cent in death rate from diphtheria, which he attributed to the use of antitoxin. Tuberculosis he reported as stationary. Pneumonia shows decrease. Birth rate is nearly twice the death rate. He gave an interesting account of a now existing epidemic of typhoid fever in Indianapolis, following a flood which overflowed the waterworks. Smallpox still prevails. Indiana health law has been declared unconstitutional by the State supreme court, and a new law must be enacted. Agrees with Doctor Porter that vaccination is only means of prevention of smallpox. Doctor Hurty described a method of educating children of public schools as to means to escape diphthera, which he termed " primal prevention."

Doctor COOPER, of Colorado, gave an interesting account of the collection of vital statistics in his State.

Doctor POWERS, of Iowa, reported on sanitary conditions in that State. He spoke of the improvement of the collection of vital statistics and of the favorable prospects for obtaining necessary appropriations for a State sanatorium for tuberculosis. He spoke of the advantages of the State law for the licensing of embalmers, who often rendered important aid to health authorities by acting as efficient disinfectors. He thanked the Public Health and Marine-Hospital Service for offer of assistance in regard to reported typhoid epidemic at Waterloo, which, however, proved a false report.

There followed a discussion as to transportation of dead bodies through the several States, participated in by Doctor Powers and others.

Doctor SOUCHON, of Louisiana, reported good health conditions in that State, and a vast improvement in sanitary conditions in the city of New Orleans by the installation of a new system of drainage and by paving and asphalting streets. The State is endeavoring to improve the collection of vital statistics, and an improvement is noted from year to year. He described the difficulty experienced in securing good results in screening cisterns and other mosquito work.

Doctor FULTON, of Maryland, reported progress in the registration of vital statistics, especially deaths. By act of the legislature tuberculosis is a reportable disease, cases being reported directly to the

State board of health, which records are closed to general inspection. Physicians are afforded opportunity to instruct families in the prophylaxis of tuberculosis, the State paying a fee of $1.50 if the instruction is satisfactory to the local board of health.

Doctor BAKER, of Michigan, handed in the report of the committee on morbidity and mortality statistics, of which he is chairman, and spoke of the Michigan law requiring prophylaxis to be taught in public schools.

Doctor BRACKEN, of Minnesota, reported that by resolution of the State board tuberculosis is to be a reportable disease when a campaign of education now in progress is sufficiently advanced. Reports will be made directly to the State board of health, except where it is now provided for by municipal ordinance. Municipal ordinances in Minneapolis require that a house declared infected with tuberculosis shall be disinfected within a prescribed time or be placarded. Work has been inaugurated for the establishment of a State sanatorium for tuberculosis. Vital statistics are fairly well collected. The State board has lost control of infectious diseases of animals. He spoke of glanders in human beings, caught from infected horses, and other instances where infection spread from the lower animals to man. Gave as his opinion that quarantine of smallpox was a mistake, vaccination being the only practicable way to fight the disease. Embalmers in Minnesota are licensed.

Doctor LINDSLEY, of Connecticut, asked if embalmers were required to disinfect premises where infectious cases had died.

Doctor BRACKEN stated that they were not required to do so; that when they did so it was under the supervision of the local health authorities and the embalmers were paid for their work. It was optional for the latter to refuse to do such work.

Doctor HURTY asked who paid for this disinfection, the municipality or the person in whose house the death occurred.

Doctor BRACKEN said he thought the municipality should pay for such work.

Doctor TUTTLE, of Montana, reported some progress in the collection of vital statistics, and described the "spotted fever" which prevails in that State. He said there had been 130 cases, 7 of which recovered. It occurred in persons of all ages, and death ensued usually about ten days after the onset of the disease. He spoke of the investigation and report of Doctor Anderson, of the Public Health and Marine-Hospital Service, on this fever, and also of Doctor Stiles's visit, from the same Service, the latter especially investigating the relation of the wood tick to the spread of the infection.

Doctor MITCHELL, of New Jersey, reported a recent act of the New Jersey legislature establishing an eligible list from which, after examination, local boards of health can procure trained employees, which law applies to all save purely clerical positions.

Doctor **Bracken** asked who conducted the examination for this eligible list.

Doctor **Mitchell** replied that there were five examiners appointed by the State board of health, who were paid from fees paid by those applying for such examination, the examinations being held in various parts of the State.

Doctor **Lewis**, of North Carolina, reported that investigation has shown the presence of hook-worm disease in the State, and that it was not confined to sandy districts. He spoke also of the prevalence of smallpox, the important part played by vaccination in the prevention of the same, disinfection by embalmers, education of school children in sanitary matters, and described the State hygienic laboratory.

Doctor **Healey**, of North Dakota, reported that previous operations of the board have been hampered by lack of funds. Vital statistics are now being better collected. He said the licensing of embalmers had proved a great help to them. Eyes and ears of school children examined.

Doctor **Probst**, of Ohio, reported several outbreaks of typhoid in his State, and sewage plants were strongly urged in next annual report of State board. Bill for collection of vital statistics had failed of passage in the legislature.

Doctor **Lee**, of Pennsylvania, stated that Pennsylvania was not a registration State, still lacking an efficient vital statistics law. Smallpox still prevailed, there having been 5,000 cases, with 600 deaths, during the past year. Typhoid fever has also prevailed, notably at Butler, Pa. Efficacy of filtration has been proved with regard to this disease. Goiter has been discovered in Canoe Township in considerable quantity. Quarantine against smallpox on Ohio River.

Doctor **Swarts**, of Rhode Island, reported the establishment of a State sanatorium for tuberculosis. The board has been investigating the communicability of pneumonia.

Doctor **Tabor**, of Texas, took occasion to express the appreciation of the people of the State of Texas of the "magnificent work of the Public Health and Marine-Hospital Service in the prevention of the recurrence of yellow fever." He said the work being done jointly by the State and national authorities has been harmonious and satisfactory, this work still continuing. Restrictions placed by law upon the sale of cocaine and morphine. State embalming board. Disinfection of Pullman cars and railway coaches.

Doctor **Bascom**, of Utah, expressed the regret of Doctor Beatty at his inability to be present, and spoke of the sanitary work going on in Utah.

Doctor Caverley, of Vermont, reported on smallpox in his State, and showed the difficulty in dealing with the disease on account of the proximity of Canada, stating that the disease was gotten rid of several times a year, only to be reintroduced. Law for reporting tuberculosis, and secretary of the board has received reports of about 1 case in every 4. He stated there had been a reduction of about 35 per cent in cases of tuberculosis during the past few years. Difficulty experienced in dealing with whooping cough and measles.

The State of Vermont being the last on the list of States, alphabetically arranged, having delegates present, the Surgeon-General stated that if there were no further remarks to be made he stood ready to adjourn the meeting. He took occasion at this time to state that all those who addressed the meeting would be expected to write out their remarks in full and mail them to the Public Health and Marine-Hospital Bureau for publication in the proceedings.

There being nothing further, the chairman accordingly announced the second annual conference adjourned at 2.10 p. m.

The delegates present were escorted by Surgeon-General Wyman at 3 o'clock to the Hygienic Laboratory of the Public Health and Marine-Hospital Service, where they inspected the work and equipment of the several divisions.

REMARKS IN EXTENSO FURNISHED BY REQUEST.

On June 6, 1904, a circular was addressed to health officers of the various States and Territories, requesting that they would write out and submit to the Bureau the remarks which they had made in response to the roll call of States while in attendance at the second annual conference of State and Territorial health officers with the Public Health and Marine-Hospital Service.

The following replies have been received:

CALIFORNIA.

Remarks by Dr. N. K. Foster, secretary of State board of health.

Mr. President and Gentlemen: Since a year ago to-day, when the conference met in this place, the situation in California has cleared considerably. As I promised then, the sanitary work has been vigorously pushed, and all cases of plague fully reported as they occurred. The work is being done by the United States Public Health and Marine-Hospital Service, State board of health, and city board of health, working in perfect harmony and accord under the general direction of Doctor Blue, of the United States Public Health and Marine-Hospital Service. There is no friction in any part of the machine and no obstacles are thrown in our way. Everyone recognizes the advantage to the city and State of the improved sanitary conditions and that confidence has been reestablished throughout the East. As an auxiliary and aid, we have established a public health association composed of the members of the different health boards, governor of the State, mayor of San Francisco, and officers of the different mercantile associations. This association is advisory, meets every two weeks, and is valuable in keeping up the interest in the work.

We have our greatest trouble in finding cases early. They are generally Chinese, and they are exceeding loath to report their cases. This is partially on account of the dread of necropsy, but more on account of the disturbance of their social and business relations. A death from plague means the destruction of much of their rubbish and a thorough cleaning up and disinfection, and they will do anything to prevent this. Their general claim is that the victim came from another place, frequently from outside, and died as soon as he arrived. Investigation shows the deception. In order to find cases early, we have the infected district divided into subdistricts, with an inspector for each. Each room has a number on its door and the inspector has a book in which is entered the house number and the number of each room in that house and the name of its occupant and his business. At each visit of the inspector he records conditions and the tenant's whereabouts. In this way we keep track of the inhabitants and sometimes find a case early. There being a great number of rooms, it is impossible to get around daily, so cases are not found as promptly as could be desired. The difficulty of finding them is increased by their shifting the sick off to another room, often an unused one. The Oriental Hospital is visited daily and all patients examined. None get treated there without our knowing it. We have also a watch kept on the drug stores, and anyone seen taking medicine to a room is reported, and in this way sick ones often located.

When a case is found the premises are vacated and thoroughly disinfected and renovated. The valueless contents are destroyed, the rest disinfected with sulphur and formaldehyde. We are negotiating now for a portable steam disinfecting apparatus with which we can do more effective work with clothing, bed, etc. As soon as a place is condemned the tenants are notified to remove. If a lodging house, this is but a short job, and the wreckers at once take charge. All wooden floors and partitions are taken from the basements into the streets and burned and a few inches of the earth carted to the bay, after being disinfected. Oftentimes wells and cisterns are found beneath the houses, which are filled. Broken drains are repaired. The walls are thoroughly washed with a disinfectant from a force pump, and lime is freely used. The back areas which have been filled, often for four stories, with wooden structures are cleaned out and the refuse burned. Where it can be safely done, enough is burned on the ground to disinfect it. The work is not confined to buildings where cases have been found, but is going on constantly and systematically throughout the Chinese quarter. As soon as the work of tearing out is done repairs are allowed, but only concrete or cement can be put in and walls are to be made rat proof. In the areas a concrete floor can be laid and a one-story structure with a glass roof put in. The city authorities, looking to the future safety of the city and believing that if the rats are all killed more will come and that safety lies in not giving them hospitality, are at the present time perfecting an ordinance requiring all buildings in the future to have rat-proof floors and walls in the basements.

Hand in hand with this work goes the destruction of rats. We do this with traps and poison. The sewers are kept baited, but it is difficult to use poison with safety around the Chinese quarters. For the past two months we have used the Danyz virus. Assurances and demonstrations that it is harmless to man have given the Chinese confidence and they are using it with reported good success. We are prepared for a few more cases, but we feel that we are on the right course and shall continue it until epidemic plague will be impossible. Exposed as we and other seaports are to infection from abroad, we may any of us expect an occasional sporadic case. Constant watchfulness must be our motto.

The general sanitary and health conditions of California are good. Owing to the constant immigration of tuberculous people our death rates from that disease are increasing to a great extent. Many come, oftentimes by advice of their physicians, when all possibility of a cure under any conditions has passed, only to die within a very short time; many when there might be hope if they had the means to properly use the advantages nature has given our State. Our climate, which is all that could be asked, will not cure consumption if the patient is shut up in a dark, ill-ventilated room, trying to live on a few cents per day, as are many who are constantly seeking our State.

Our climate is good because the air is pure and one can live out of doors all the time. It is worse than useless to send people there who have not the means to secure proper food, care and direction. But few of them understand the necessity of pure air, good food, and rest, and rush blindly to the other extreme. The State is awakening to its danger and steps are being taken to limit the spread of the disease as much as possible. The people are being taught that it is a communicable disease and also a curable one, if taken early. Laws are being passed and enforced against expectoration on sidewalks. The transportation companies are aiding us in their willingness to thoroughly disinfect cars and keep them clean. We hope to reduce soon our death rate from consumption, but until those who are nearly gone with the disease cease to flock to California our rate will be high.

Smallpox has given us some trouble. It has been quite extensive, but very mild, which fact has been the cause of the trouble. It is often diagnosed everything but smallpox, and not until it was broadly scattered would it be recognized.

COLORADO.

Report by Dr. C. E. Cooper, secretary State board of health.

Sir: In response to your letter of June 6, I have to offer the following as my remarks at the conference of the public health officials with the United States Marine-Hospital Service. I was in ignorance until the previous evening that the committees appointed by the Surgeon-General at last year's conference were committees of reference only, and consequently the committee on tuberculosis, in anticipation of being called upon for a report, prepared such report, which, in view of the short time allowed for the conference, was not read, but submitted for publication. A few remarks on its contents will be apropos. The report is based upon two fundamental and generally accepted principles, namely, tuberculosis is a communicable disease and tuberculosis can be cured. It urges upon all States that they require report of cases of tuberculosis occurring within their borders, and it recommends an educational feature to be combined with the report, and emphasizes simplicity in this educational feature. Too much detail will only confuse the consumptive, and a few simple rules for his deportment will be sufficient to protect the public from infection.

It recommends uniformity in education and suggests that a committee be appointed to prepare such educational matter. It offers for your consideration a form on which cases of tuberculosis may be reported. In doing so the idea is to secure uniform information, and consequently statistics of some value. It treats of the establishing of sanatoria by States for the care of the indigent poor and recommends that States establish laboratories for the purpose of sputum analyses, service to be rendered gratuitous, providing the attending physician will reciprocate by reporting his cases. These are the chief points contained in the report. In our State tuberculosis is the greatest question with which we have to deal, and I believe it is the opinion of all that the time is now ripe for boards of health to be authorized to require the report of tuberculosis and to make an attempt to educate the consumptive and the public in their relations with each other and with the disease. The State of Colorado is doing about the same work and along the same lines that other States in the Union are engaged in. We license embalmers and have a laboratory for the examination of suspected throat cultures. We have general jurisdiction of the contagious diseases within the State.

I wish especially to emphasize our method of collecting vital statistics, especially reports of death. We believe that we collect 95 per cent of all deaths occurring in the State. That is a very conservative statement. I personally am of the opinion that the percentage reaches 98 or 99 per cent of all deaths occurring within the State, but this has never been extensively verified. Our population is situated at great distances. We have numerous localities that are sparsely populated. These two features offer very great obstacles for the collection of vital statistics, but our system, which requires prompt report to us from every undertaker, firm, corporation, or individual having in charge the burial or other disposition of the deceased enables us to receive returns within a few hours and obviates the delay and inaccuracy of receiving returns by requiring county clerks and town clerks to report same annually, semiannually, or quarterly to this board. Our system requires that the death certificate be accurately compiled in duplicate, the original being forwarded to this board within twenty-four hours from the date of interment or other disposition, the duplicate to be filed with the town or county clerk having jurisdiction where the death occurred. This affords us an opportunity of keeping a constant check, and by comparing monthly with said clerks of the State we are enabled to obtain an accurate report of deaths not only in this office but in the offices of the various clerks.

The law gives this board general supervision of the water used for drinking purposes, and the board is empowered to approve or disapprove of any water-supply system in operation or intended to be built or any additions to present systems in any of the towns of the State. This is a great deal of assistance when the question of typhoid fever arises, as has been recently demonstrated in an epidemic which occurred during January and February, 1904, at Leadville, Colo. I do not think that the rest of the work of the board requires much comment, as it is the same as other boards throughout the United States.

CONNECTICUT.

Remarks by Dr. C. A. Lindsley, secretary State board of health.

Mr. President: The system of sanitary administration in Connecticut has been so often related at previous conferences that it must be quite familiar to most of the members present, and it is unnecessary to rehearse it. The matter of most concern and interest at the present time in our State is the occurrence of an epidemic of cerebro-spinal meningitis.

It began very suddenly in Hartford. During the month of April 43 cases were reported to the State board of health, with a fatality of 20 during the month. Since then the total has amounted to upward of 70, with a death rate of 65 per cent. In regard to the diagnosis, the pathognomic symptoms have been strongly conspicuous in most of the cases, although in some of the cases which have recovered there may be cause for doubt. Of 20 cases treated at the hospital, in 17 of which lumbar puncture was performed and the exudate tested biologically, the specific germ, the diplococcus intracellularis meningitidis, was found in 13 instances.

The disease attacked chiefly those in the period of youth and early adult life. In no instance did it occur in an infant under a year of age, and only one past the age of 60. The majority of victims were under the age of 15. This susceptibility at certain age periods has been observed at all previous epidemics, both in this country and abroad.

An unusual number of cases have been reported from several other towns in the State, more numerously in the vicinity of Hartford.

The patients were largely occupants of tenement houses, and in an insanitary environment. Different opinions prevail as to its contagious character. The experience of this epidemic has not settled the question. It surely is not actively contagious. Of the cases treated in the hospital 85 per cent were fatal.

At the request of the city board of health of Hartford, the United States Public Health and Marine-Hospital Service detailed Dr. John F. Anderson as an expert to proceed to Hartford and investigate the outbreak. As his report will doubtless be published, I will not speak further upon it.

Tuberculosis.—Connecticut has shared in the interest everywhere manifested in this disease and has not been altogether inactive. Two years ago a hospital was established in Hartford, assisted by an appropriation of $25,000 from the

State, and known as an "Experimental Hospital." Cases in all stages of the disease were received, on the plea that the public would be best protected by caring for the incurable, as they were most productive of the infective material. The plan did not seem satisfactory, and for that and other reasons the hospital has been closed.

During the past year the antituberculosis association has been formed in New Haven County. It also has received $25,000 from the State, which amount has been supplemented by $50,000 or $60,000 more from private philanthropy. With these means a farm of 250 acres has been secured upon the top of an eminence 400 feet above the level of the sea, very remote from habitations and manufacturing establishments—an ideal site for the purpose.

An executive and recreation building and several cottages have been erected, also a barn and farmer's house. The plant is fully equipped with a good water supply, electric lighting, and modern method of sewage disposal. It is expected to be opened for the reception of patients during the present month. Only incipient cases and patients who give reasonable hope of recovery will be received for treatment. The association does not believe that hopeful cases and incurables can be prudently and wisely kept in close contact with each other.

In the city of New Haven a series of lectures has been given in the past winter by a volunteer corps of physicians, in the public schools and before various city organizations, on the influences which promote the spread of consumption and the means of prevention. Circulars have also been freely distributed and an earnest effort made to disseminate practical information among the people.

The public health of Connecticut has not been distinguished during the past year by any severe epidemic. Our system of sanitary administration is steadily improving in practical work with enlarged experience, and the collection and registration of vital statistics is not exceeded in fullness and accuracy by any other State in the Union.

DISTRICT OF COLUMBIA.

Report of Dr. W. C. Fowler, deputy health officer.

Dear Sir: In reply to yours of the 6th instant I have the honor to state that no remarks were made by me at the recent conference of State health officers with the Public Health and Marine-Hospital Service. The following statement is, however, submitted for your consideration in connection with the publication of the transactions of the conference.

During the past twelve months there has been a decided decrease in the number of cases of typhoid fever reported to this department. Nine hundred and forty cases only were reported from June 1, 1903, to May 31, 1904, as against 1,592 cases for the corresponding period of the preceding twelve months.

Diphtheria has prevailed to about the same extent as heretofore. Scarlet fever, however, has, I regret to say, been slightly more prevalent than heretofore, but most of the cases have been of a mild type, with a very light mortality.

An occasional case of smallpox was reported to the health department. Nearly all of them, however, have been of a mild type. There has been no death from that disease during the past fifteen months.

A very considerable part of the total number of cases of smallpox which occur in this District is made up of patients who have contracted the disease in other communities. Against such cases the community is, of course, powerless to help itself and looks to the Public Health and Marine-Hospital Service for protection.

Special attention has been paid by the department to the subject of tuberculosis. There is no law in the District of Columbia which requires cases of this disease to be reported to the health department. Every effort, however, is made by the department to secure the disinfection of premises in which tuberculosis patients have died or where the premises have recently been vacated by persons suffering from that disease. It is the practice of the department, upon receipt of a certificate of death from tuberculosis, to mail a circular to the attending physician, calling his attention to the fact that, as it is now generally recognized that the disease can be conveyed through the infection of rooms which have been occupied by comsumptives to persons subsequently occupying such rooms, the department recommends that disinfection be done and is ready and willing to do the work or to assist in the proper performance of the same. As the result of this action on the part of the health department 318 premises have been disinfected during the past twelve months.

Congress, at a recent session, having made provision for the medical inspection of the public schools of this District, that service was put into operation at the beginning of the school year, September, 1903. The department believes that great benefit has resulted from the installation of this service. During the term many children have been excluded by the inspectors because suffering from the various contagious and communicable diseases. In several instances children were found in school while still desquamating from scarlet fever, there having been no physician in attendance on the case and the character of the disease being unrecognized by the parents of the child.

FLORIDA.

Remarks by Dr. Jos. Y. Porter, State Health Officer.

Mr. Chairman: Responding to your invitation to speak for the sanitary interests of Florida, I am happy to say that since we last met, June, 1903, the State which I represent has made fair progress in measures calculated to better the health of the Commonwealth. It is pleasing also to say that the health of Florida during the past year has been very good. According to the statistical report made at the annual meeting of the State board of health in February of this year the death rate for 1903 was computed from returns received as 7.37 per 1,000 of population, and the birth rate at 14.97. No epidemics of any kind disturbed the comfort or tranquillity of the people. Slight outbreaks of diphtheria were speedily controlled by the prompt use of diphtheritic antitoxin, and occasional cases of scarlet fever, being closely looked after by isolation and disinfection, did not materially disquiet communities in which they happened to occur. Smallpox has given the State board of health the greatest annoyance and entailed the largest monetary burden of any of the contagious diseases which the board has to contend with.

The statutes of Florida relating to certain contagious diseases, their care and control, imposes upon the State board of health an imperative duty of management, both of police and expense, of every case of smallpox, cholera, or yellow fever which may occur in the State, and while the cases of smallpox have been mild, with but slight mortality, yet the constant exercise of supervision which every occurrence makes obligatory on the board increases the cost of maintenance of the board and keeps almost in constant travel the three special agents which the board gives to the State health officer as his field assistants. In the annual report of the State health officer, which I here present, it will be seen from the admirable reports on the management of smallpox outbreaks in various parts of Florida by the special agents referred to that 664 cases of smallpox were cared for by the State board of health, and at a cost of $6.95 per case. The management consists of treatment medically, food, nursing, guarding, and subsequent disinfection. It is thought that this is not a bad showing for an economical management of a disease which generally runs through a period of from three to six weeks. Until the general public is educated to the appreciation of vaccination, its benefits, and its protection, smallpox may be expected to exist throughout the country, particularly where travel is great and facilities for getting from place to place at a rapid rate are so ample. An ineffectual effort was made in Florida in 1901, at the session of the legislature of that year, to pass a compulsory vaccination law which would principally prevent the employment of unvaccinated labor in the State, but the opposition was too strong to the measure.

Respecting diphtheria and its control, I would like here to mention that the State board of health furnished antitoxins free to indigent patients on a physician's prescription and certificate of financial inability of patient to procure the remedy. Druggists in Florida have been requested to keep this serum in stock, so that the remedy may be promptly accessible when required. The State board of health pays the druggists for the article, as previously stated, allowing a fair profit on the remedy. At the annual meeting of the board, in February, new rules and regulations were adopted, which are here presented, and I would invite attention to the method proposed for the collection of vital statistics which was adopted, and which is in harmony and on the lines recommended by the Bureau of Vital Statistics of the General Government, as set forth in a circular letter from Mr. W. A. King, chief statistician of the Census Office, and his assistant, Dr. Cressy Wilbur.

The board also seeks to regulate the "spitting habit" in public places and to supervise the sanitation of public conveyances.

To place in operation the recommendation of the Conference of State and Provincial Boards of Health in regard to the transportation of the dead, which rules the State board of health of Florida adopted, an examination was had of all undertakers who wished to practice embalming, and to those passing a satisfactory examination, conducted under the direction of the State board of health, licenses have been issued. Hereafter only bodies prepared for shipment by a licensed embalmer will be received by the transportation companies in the State.

The work of the bacteriological laboratory of the board, mention of which was made at the last conference, has so increased that an assistant has been engaged in order to keep up with the demands made upon that institution for examination of blood, sputum, urine, and pathological specimens sent in for diagnosis. Recently the bacteriological examination of water has been added to the efforts of the laboratory to serve the health interests of the people. The method of conducting these examinations was described when speaking on the subject last year. The examination is done at the expense of the State, and the laboratory is open to any citizen of Florida without charge for advice or consultation. The report of the director of the laboratory, Dr. Eduardo Andrade, on the result of the first year's work in this field of scientific investigation is sufficiently interesting for me to ask that it may be allowed space as a part of these remarks on the health work of the State board of health of Florida.

The maritime sanitation of the State is operated by the Public Health and Marine-Hospital Service, the transfer from State control to the Government having been effected in 1901. The administration is entirely satisfactory, and is very efficiently performed.

Before closing these remarks I wish to thank you, Mr. Chairman, for the very flattering compliment paid me in my appointment as chairman of the committee on yellow fever. I regret that I have no special report on this subject to make at this time. I communicated with my associates on the committee, but received only one reply, from Doctor Tabor, State health officer of

Texas, who regretted that urgent duties prevented him from writing anything to be submitted to the conference on this highly interesting subject. I trust that at the next meeting the committee may have something of interest to say.

I believe, Mr. Chairman, this is about all I have to speak on at present on behalf of the State board of health of Florida, and thank you for according me so much time.

INDIANA.

Remarks by Dr. J. N. Hurty, secretary State board of health.

We are making progress in sanitary work in Indiana. Accurate mortality statistics have now been collected for four years, and we are beginning to reap the benefits from such work. We now know that diphtheria deaths are decreasing, probably on account of the more general use of antitoxin. Our statistics show, however, that the number of cases are not decreasing. This indicates that the medical profession of the State is not using antitoxin as a prophylactic. Scarlet fever deaths in 1903 showed a slight increase over the average for the last four years, and consumption seems to be at a standstill, while typhoid fever is decreasing. It seems reasonable to credit in some degree the decrease in typhoid fever and also in diarrheal diseases to the work of the State board of health, for it has distributed thousands of circulars upon the prevention of these maladies and has published hundreds of communications in the papers, besides calling the attention of farmers and teachers to the matter at farmers' and teachers' institutes.

Recently the very excellent health law passed in 1899 has been decided unconstitutional, but this simply gives us the opportunity to secure a still better law from the next legislature, and the decision has not interfered with our work as yet.

Smallpox has plagued the State considerably. Except in rare instances it has appeared in mild form, yet it has been a great drawback to business and the comfort of communities.

We hold two health officers' schools every year. The first one is held in June, and to it are summoned, according to the law, all county and city health officers, about 300 in number. The second school is held in December, and to it all town health officers are summoned, about 300 in number. At these schools men eminent in hygiene work are secured from abroad, but much of the teaching is done by local physicians and professors drawn from the State colleges. The expenses of the health officers in attending these schools are paid by their respective boards. We feel confident that excellent results have proceeded from these schools. Purdue University, which is the industrial university of the State, located at Lafayette, has a department of sanitary science, which is conducted by Prof. Severance Burrage. During the last term there were 12 students who elected this course. The Indiana Medical College has established a regular chair of State medicine and hygiene, and hereafter this subject will be thoroughly taught. It is expected to secure from the next legislature a State laboratory of hygiene, to be under the supervision of the State board of health, and also to secure a State hospital for consumptives. The preliminary steps have been taken for the formation of a society for the prevention of tuberculosis, and all promises well for the enterprise. The State board of health expects next winter to make a special campaign in regard to school hygiene.

LOUISIANA.

Report of Dr. Edmond Souchon, president State board of health.

Louisiana has enjoyed a most remarkable state of good health since the yellow fever disappeared after 1899.

All would be satisfactory in the State but for some apprehension that is felt lest the yellow fever in Mexico may invade Texas and thence reach Louisiana.

The city of New Orleans is making most remarkable strides in sanitation by installing simultaneously the most extensive system in modern times of drainage, sewerage, pure water, paving, etc.

When the system is completed and is extended to the very outskirts of the city, followed by the removal of cisterns, tanks, and barrels, there will be very little left to do to make New Orleans a mosquito-proof city.

MONTANA.

Remarks by Dr. T. D. Tuttle, secretary State board of health.

Montana, thanks to her climatic conditions and the general topography of the State, is free from certain of the diseases that are so dreaded and give so much trouble in many of our sister States. We have no fear of the mosquito bite causing malaria among our people. We worry not at the news of an outbreak of yellow fever; that is, we do not worry regarding our personal safety. Cholera has never appeared in our State, and even the enteric troubles that carry off so many children among our Eastern neighbors are rarely seen, even in a mild form, among the children of Montana. At one time we were somewhat disturbed at the thought of the "plague" extending to our State from certain western ports, but of late that fear has subsided, and after hearing to-day an account of the efforts being put forth by the California State board of health to eliminate this disease from their State and at the same time protect other States I can but say that it appears to me that our people are in more danger of breaking their legs on smooth sidewalks than from the introduction of bubonic plague through a port where the health officers are as active as they are in California. While Montana is thus free from certain of the diseases with which our sister States must contend, we are by no means free from all such diseases. We have the smallpox, diphtheria, scarlet fever, and other similar diseases to contend with, and the scattered population makes this work peculiar in our State. Quarantine regulations are enforced with the greatest difficulty, and among a people who have never been called upon to observe quarantine under any circumstances the task of the health officer is often anything but pleasant.

Regardless of the difficulties under which we must work, I believe our State has made no little progress in these matters. Three years ago there was no quarantine other than that which the individual city or county boards of health saw fit to establish. There was no effort at sanitary regulations other than the spasmodic outbreak by a single city or county board of health. Such work amounted to absolutely nothing, for while one county was attempting to prevent the spread of any disease within its boundaries an adjoining county could keep the disease going by permitting exposed persons to carry the disease to the other county. One county never thought of quarantining against another. To-day we have live, active boards of health in every county and in all cities, and all are acting together and harmoniously to the end that our State may be placed in the best sanitary condition and be freer from communicable diseases than any other State in the Union. If a county board of health becomes lax in its work, it is very promptly wakened up by a quarantine being established against it by the adjoining counties, as was done in one case last winter. The result is that communicable diseases have been greatly reduced among our people and the sanitary condition of the State has been greatly improved. However, there is much to be done, and time will be required to accomplish many of the things we hope for. Our law is defective in many points, but we hope to be able to do away with these defects at our coming legislature.

With the exception of among the Indians, where it is very prevalent, tuberculosis is comparatively rare in Montana, and yet I would not say that Montana would be a good State for a consumptive to come to, for the disease, once acquired, seems to progress quite rapidly in our climate.

However, we have one disease that seems to be peculiar to our State and to a certain section of our State. That disease has been, unfortunately, designated as "spotted fever," but it is not the spotted fever (meningitis) of medical literature. It has some of the characteristics of meningitis, but lacks the nervous symptoms and lacks the pathological changes found at post-mortem examinations in meningitis. In some respects it resembles typhus fever, but it is not contagious. Two years ago Doctors Wilson and Chowning, of the University of Minnesota, isolated a plasmodium from blood of these patients and advanced the theory that the disease was conveyed to man by the common wood tick. Doctor Anderson, of the United States Public Health and Marine-Hospital Service, was in the field last year and confirmed in some degree the theories advanced by Wilson and Chowning. This year Doctor Stiles, of the latter institution, is in the field, and we hope he will be able to demonstrate the cause of this strange disease, that has proven almost universally fatal. The disease was not known among the Indians, and only of recent years has it appeared among the whites. Up to the last two years the disease was confined strictly to one side of the river in the valley, but during these two years the disease has appeared on the opposite side of the river and at two points on the opposite side of the mountain range.

NORTH CAROLINA.

Remarks by Dr. Richard H. Lewis, secretary State board of health.

Mr. Chairman: In view of the fact that the hour is quite late, I will be very brief in what I have to say.

Under the law our State board of health has no executive powers or functions, but is a purely advisory body. The sanitary unit in our State is the county sanitary committee, composed of the board of county commissioners and two physicians.

During the past year smallpox has prevailed more widely with us than ever before, but in a milder form than we have previously experienced. The particular difficulties in the management of the disease has come from this very mildness.

In the matter of tuberculosis it is proposed to make a crusade looking toward its prevention. While indorsing the various methods usually resorted to in the effort to bring about its prevention, we are of the opinion that sufficient emphasis has not been laid upon the family physician. The whole thing practically depends upon his cooperation, and our efforts will be directed especially toward securing this cooperation on the part of the profession.

We have a State board of embalming, composed of three members of the State board of health and two practical embalmers. This board examines and licenses embalmers, so that the rule adopted by the National Conference of State and Provincial Boards of Health requiring bodies dead of certain contagious diseases to be embalmed by licensed embalmers can be complied with.

Under the act to protect water supplies, which requires all water companies selling water to the people to have a chemical analysis made quarterly and a biological analysis made monthly in the laboratory of the State board of health, or such other laboratory as they may select, and authorizing the charge of $5 for each analysis, and by cooperation with the State department of agriculture we have succeeded in establishing a laboratory for sanitary work. It has been of considerable service during the past year and will no doubt increase in usefulness.

During the year our board has published a special bulletin on school hygiene, giving drawings of proper schoolhouses and dealing with all questions of sanitation especially relating to school children. This bulletin has been distributed to all the school teachers in the State.

The most interesting thing with us in the sanitary line during the past year has been the investigation of the hook-worm disease. Our interest had been greatly increased by the admirable address on the subject by Doctor Stiles, of your Service, at the meeting of the State medical society at Hot Springs last year. It is unnecessary to go into detail further than to say that we have found it to be widely prevalent, and that it is not restricted to the sandy regions, as writers on the subject are disposed to think, inasmuch as numbers of cases have been found at the foot of the Blue Ridge, and doubtless there are cases in the heart of our mountains.

NORTH DAKOTA.

Remarks by Dr. H. H. Healy, secretary State board of health.

Mr. Chairman: I feel much in the same position as the delegate from Montana, when he said that he came to this conference with the object not to speak, but to listen to and learn from older and wiser heads. I expect to catch an inspiration from mingling with you, so that when I return to my own State I will take up my work with increased vigor and accomplish more in the future than in the past. I may say, however, that North Dakota is on the map, and will remain there. Our State is young, but flourishing. We have an intelligent, energetic class of people, who want the best of everything. We have already good health laws, and a good law for the collection of vital statistics.

Up to one year ago our board had only $300 per year to cover all expenses, but at the last session of the legislature that amount was raised to $1,500. We are now able to do a little something in the line of keeping better records, printing circulars, doing a good deal of personal correspondence, making trips of investigation, etc. I have hopes that in the near future we will be given enough money to enable us to do work which will compare favorably with some of the older States.

Thank you, Mr. Chairman.

PENNSYLVANIA.

Remarks by Mr. Benjamin Lee, secretary State board of health.

Mr. Chairman and Gentlemen: Since the last meeting of the conference no change has occurred either in the organization or the administrative work of the board. I am compelled to report Pennsylvania as still a nonregistration State. Stimulated, however, by the passage of the joint resolution of Congress, urging all the States to adopt laws which shall make the registration of vital statistics assured, and fortunately possessing the sympathy of our learned and patriotic governor in respect to this movement, and having lately at a State sanitary convention composed of health authorities and sanitarians representing the entire State enjoyed the opportunity of listening to an able and thoroughly illustrated address from the statistician for vital statistics of the United States Census Bureau on this subject, and having brought the matter to the notice of the State medical society and of all the county medical societies in the State, we feel that we have good reason to anticipate that the next legislature will remove this stain from our escutcheon. We feel the more confident of this from the fact that our board has enjoyed, during the past year, the cooperation and valuable aid of two very serious epidemics.

The first of these was a continuance of the widespread epidemic of smallpox which has been traveling up and down the United States for the past four or five years. Aroused by this threatening condition the last legislature placed in our hands the means to meet this emergency to a far more liberal extent than ever before, and we have been able to demonstrate to the entire State the value of a central authority, fully equipped with means to control an epidemic. Not only did the legislature give us additional means, but it also greatly increased our powers. It may be known to some of the members of this conference that at the time of our meeting a year ago we were confronted by the problem of a large city which, neglectful of its duties for the protection of its own citizens and of the state and country at large, contumaciously refused to adopt such suggestions as the State board of health had considered essential to the eradication of the disease. Out of this contest our board came completely victorious. The officials who ignored our orders were promptly sat upon by their superiors and every order of the State board of health was efficiently carried out. The result is that at the present time not a single case of smallpox exists in that city, and the entire county, which was thoroughly saturated from end to end with the infection, is now clean. This has not been accomplished without a certain amount of litigation, which I am glad to be able to say has invariably resulted in our favor. We feel ourselves, however, still endangered by the introduction of the disease from Ohio and West Virginia, through the medium of the steam navigation of the Ohio River. We have, therefore, after duly notifying the Public Health Service and the health authorities of the two States mentioned, with their entire concurrence, established a quarantine of the Ohio River at the State line, affecting all ports on the river where the disease has been prevalent. The officer in charge of this quarantine allows no unvaccinated person to pass his station. The consequence is that we have vaccinated a very considerable number of the population of the States named.

A second epidemic is one of which you all have become thoroughly aware, that of typhoid fever in the city of Butler. The report of the operations of our board in the suppression of that epidemic is now in the hands of the printer, and I shall have the pleasure at an early date of placing a copy in the hands of every member of the conference.

A representative of your service, Mr. President, was present during the prevalence of the epidemic and made valuable observations, of which we shall hope to avail ourselves with your permission. This epidemic demonstrated the absolute necessity for a system of registration, not only of deaths but of communicable diseases in the State, and will furnish us an argument which the State legislature will not be able to ignore. It also furnished an equally complete demonstration of the value of filtration in protecting a community against the germs of infectious diseases conveyed through its water supply. For two years Butler had lived in security with only an occasional case of typhoid, but within exactly the time required for the incubation of this disease after the filtration of the water had been dispensed with, for causes which it is not necessary here to recite, the entire town was swept with the besom of destruction, there quickly being scarcely a house without a victim. We feel, therefore, that this great calamity has been also for us a great opportunity.

A somewhat singular discovery has been made during the past winter of an endemic of goiter in a small farming district on an elevated plateau of the Allegheny Mountains. The proportion of the population affected is something startling, and the interesting fact appears to have been observed that persons already affected with the disease, on removing to other localities, experience a diminution of the goitrous growths. Our board has inaugurated a thorough investigation into the habits, food, and water supply of these people, and is in hopes of being able to arrive at conclusions which will settle the vexed question of the origin of this disease. We shall hope, Mr. President, that in case we may not be able to prosecute our inquiries as thoroughly as we may wish on account of the necessary expense, we may look for substantial aid from your service in the matter.

RHODE ISLAND.

Remarks by Dr. Gardner T. Swarts, secretary State board of health.

Mr. Chairman: The only changes in the sanitary laws of the State of Rhode Island during the past year have been the enactment of a law governing the operation of barber shops, the same to be operated under sanitary rules recommended by the State board of health. The operation of the law is placed in the hands of the barbers' commission.

Up to the present time it has served to abolish quite a number of cheap barber shops which are usually conducted by foreigners, and has caused the majority of these operators to give more attention to careless use of their utensils, thus limiting to a certain extent the spread of communicable diseases which are associated with barber shops.

The State board of health has also been given a limited amount of power or control of certain of the potable water supplies in this State. The law is not as broad and far-reaching as we might desire, but is much more than we have been able to obtain for some time.

The undertakers of the State having become impressed with the impracticability of transporting the remains of dead persons to other parts of the United States, owing to the adoption of the conference rules governing transportation of the dead, asked the legislature for suitable rules which should provide for the licensing of undertakers and embalmers. Owing to the fear of some country undertakers that they might be deprived of their daily bread the legislature did not see fit to pass the act.

While our board does not see the scientific or practical necessity of such stringent rules as have been adopted by most of the States, yet it was obliged to encourage the passage of the bill as far as possible, that such of the traveling public and guests at summer hotels as are unfortunate enough to die within our borders might have their remains transported to their own homes without interference from the transportation agents.

UTAH.

Remarks by Dr. F. S. Bascom, president State board of health.

Mr. Chairman: As our time is so limited, and Utah has received her full share of attention in Washington recently, I will be brief in my remarks. I greatly regret that our secretary and executive officer, Dr. T. B. Beatty, was unable to be present at this meeting, and that I have no detailed report to submit, such as I know he would have presented, but I want to assure you that Utah is interested and is fast coming into line in matters pertaining to public health. The great endeavor of the State board is to educate the people and secure proper legislation, and recently we have adopted a more uniform method of securing reports on vital statistics and have endeavored, through the public schools, to not only disseminate knowledge pertaining to prevention of contagious and communicable diseases, but to secure the reports of teachers on defects of eyesight and hearing of pupils. By resolution of the board, tuberculosis and pneumonia are to be reported, and we have even solicited the interest of the Mormon Church in the work of the board, and many of the bishops have expressed their willingness to preach health and preventive medicine to the people, in accordance with the suggestions of the State board of health. We expect marked advancement during the coming year.

VERMONT.

Remarks by Dr. C. S. Caverley, president State board of health.

Mr. Chairman: A small State geographically, endowed by nature with all that tends to health, and with no large cities, Vermont certainly should make a good showing from a sanitary standpoint. The health officials, State and local, are organized and working together to realize our sanitary possibilities. So far we have fortunately been exempt from outbreaks of most of those major infections which have worried other parts of the world. Of smallpox we have, perhaps, had our share the past year. We have succeeded, however, in stamping it out several times, but only to find a fresh focus from importation. Our counties bordering on Canada have suffered chiefly from this disease. The mortality and case rates of typhoid fever, diphtheria, and tuberculosis in Vermont, with the help of excellent laboratory facilities for diagnosis within the reach of every doctor in the State, are being cut down yearly.

Doctor Abbott, secretary of the Massachusetts State board of health, has recently published a paper on "The decrease of consumption in New England." His figures show that the mean annual decrease of the death rate from consumption in Vermont, 1892–1901, inclusive, was 3.1 per cent, and that the mean death rate during the past ten years from this disease in Vermont was 14.93 per 10,000—less than that of any other New England State.

Our State has taken active legislative measures against this disease, the legislature at its last session passing an act requiring each physician in the State to report directly to the secretary of the State board of health all cases coming under his observation. The secretary is then required to place proper literature in regard to the disease, its cause and prevention, in the hands of the patient or his family. This law has not been wholly successful, many physicians failing, presumably because of a lack of fee attached to such reporting, to make reports.

A tuberculosis commission was also established by our last legislature, whose duty it is to investigate the disease and who are to make a report giving the result of their observations and recommendations to the next legislature.

Perhaps Vermont is exceptional in this respect, but we have had much trouble in exercising any sort of control over those minor infections, measles and whooping-cough. These diseases are reportable and subject to what we term "modified quarantine" under our regulations. We are not able to secure prompt or accurate reports from physicians to health officers, and in a great many instances the diseases gain great headway before they are discovered, and are then allowed to burn themselves out.

They regularly are the direct cause of more deaths than scarlet fever and indirectly many more.

Our death rate has been gradually lessening and now is very close to 17. Pneumonia is our most fatal disease, having replaced consumption at the head of the list several years ago.

APPENDICES.

REPORTS OF COMMITTEES.

APPENDIX A.

REPORT ON PLAGUE.

By N. K. FOSTER,
Secretary, State Board of Health, California.

Appendix A.

REPORT ON PLAGUE.

By N. K. Foster, *Secretary, State Board of Health, California.*

The prevention of plague is a subject that has attracted the attention of the world for ages, and with the present death rate of nearly or quite 100,000 per month it certainly has lost none of its importance. A disease that has run riot since the earliest ages "and, as regards social and political conditions, had the most terrible consequences; it actually caused a loosening of all prevailing conditions, even of the most intimate family ties, and it had as a consequence, in the truest sense of the word, a deterioration of all social and friendly relations."

No part of the world has been spared. Asia, probably its home, has been the scene of many terrible epidemics, and Europe during the fourteenth century lost, it is estimated, one-fourth of its inhabitants. Neither heat nor cold checked its spread, and Greenland and Norway suffered equally with Egypt and India. America alone escaped, and as late as 1898 we find writers proclaiming its nonexistence here. This gave such a feeling of security that to the American physician it was a subject of only general interest until its appearance in South America in 1899 and in San Francisco in 1900. Its continued spread in the Southern Hemisphere and Mexico and its persistence in San Francisco emphasizes the fact that we are not immune and that American physicians must grasp in their usual practical manner the solution of the question.

It was first discovered in San Francisco in 1900, but its first appearance is unknown, as some reputable physicians claim to have seen cases of the same disease a year or more before, but did not recognize it as plague. There is little doubt that it was brought there by the Chinese or by infected rats from the Far East some time during the preceding few years when it was so prevalent in that country. The close watch kept on immigrants, but more especially the long voyage during which plague would have developed if aboard ship in man, makes it highly probable that the disease was brought by rats. That it was not recognized is due to the little knowledge and experience physicians had with the disease and that its diagnosis is not easy; also, that the Chinese, with their well-known power of deception, concealed the true condition of affairs. There certainly could have been no great mortality, or attention would have been attracted to it.

In treating the subject we will review the general literature and compare the conclusions reached with our experience in San Francisco. The conditions in that city in the portions infected more nearly correspond to those in the Far East than any city in the United States, but it being the only city in this country where it is recognized, and, excepting the Asiatic colony, the social and sanitary conditions being not unlike other large cities of this country the results of work done and conclusions reached will be of value to others. The discovery of the special micro-organism of the disease by Kitasato and Yersin and its repeated demonstration by others have established beyond question the cause and has been a long step in solving the question of prevention. While fighting a subtle and evasive foe we at least know its nature and some of its haunts. Where the bacteria live and multiply, and how they spread from these centers of infection, are questions that are only partially answered. The disease is essentially one of filth and is doubtless kept alive and active by the insanitary conditions of the so-called endemic centers. Scheube says: "Agglomeration of dirt in the houses and in the streets, defective removal of fecal and other animal excretory matter, crowding and insufficient ventilation of the dwellings, bad and insufficient food, all help as predisposing causes of illness. The poorer part of the population are always stricken most heavily, occasionally also they are the only victims. It was on this account that Cabiadis designated the plague 'miseriæ morbus.' If among the population of a town or country the peoples of different races and nationalities are attacked in an unequal degree, this is attributable less to the racial differences than to the different hygienic conditions under which they live. In Canton, during the epidemic of 1894, the foreigners, with their native servants, living in good hygienic surroundings on the island of Shamein, were completely free of plague, while many Chinese, dwelling on the opposite side of the branch of the river, 50 feet wide, which separates the island from the town, were attacked by the disease."

Manson says: "The most potent circumstances which predispose to the epidemic outbreak of plague are extreme filth and overcrowding. In such circumstances the virus, once introduced, tends to spread. These conditions, however, are not all-sufficient, for even in the filthiest and most crowded oriental towns, and without any apparent alteration in the habits or circumstances of the population, the disease, after having become epidemic, dies out spontaneously. It may be difficult to indicate the exact way or ways in which filth and overcrowding operate, but certain it is, as experience has shown, that in sanitary hygienic conditions plague does not spread even if introduced, and that in opposite conditions it may for a time spread like wildfire." "In Mesopotamia the ground is saturated with moisture and with a bluish-black oily fluid which surrounds the huts and stains the walls at 2 feet from the ground." (Russell.) "The people of India among whom the Bali plague raged are 'filthy beyond description.'" (Francis.) "The oriental portion of Hongkong is really a whitened sepulcher. Here in the tenements and side alleys the coolies live in indescribable filth, the segregation and overcrowding being so great that at night the overflow sleep in the streets." (Flint.)

The condition in San Francisco was not many degrees better. Most of the buildings as originally constructed were sanitary. There were large areas for light and air behind, with frequent alleys between. The basements were high, plumbing was properly done, and sewers laid. Rooms were high and airy. The Chinaman, with his natural frugal mind, divided both basement and rooms midway from floor to ceiling with another floor, thereby doubling his floor space. The rooms are divided into numerous others, just large enough for a bunk and stool. The areas are built in with wooden structures, which cling to the walls on all sides, like nests of swallows, often filling the whole space. No attention is paid to light or air, only to exclude it. Here in the dark, damp, dirty rooms, with no ray of sunlight possible, and air only as it comes through narrow staircases, or filtered through filthy floors, live hundreds of Chinamen. In some far corner of the room away from light or air is the toilet, wet and filthy. According to the German commission the germ can not thrive without oxygen. This Abel denies, but certain it is that in abodes where oxygen is deficient it thrives best. Kitasato, Wilm, Hankin, and Lehmann say that the plague bacillus is seldom found outside the human and animal organism, although it has been discovered a few times in dirt, sweepings, and water contaminated with feces. May it not be possible that in such insanitary conditions we have exactly what is necessary for the perpetuity of the germ; that here it will multiply and increase in virulence until, all conditions favorable, it breaks out and epidemics result?

Laboratory experiments prove that the germ is easily destroyed by disinfectants, by heat and sunlight. It is very sensitive to rapid drying, and in tropical climates perishes more rapidly than in temperate. Kasansley found cultures viable after being exposed to the cold of winter for five months at a temperature of 30°. It follows, therefore, that the bacillus in the dark, damp basements, where human excreta is mingled with the soil and oxygen is deficient and the temperature is never high, has at least a most favorable chance for existence. Examinations of the soil in the worst places in San Francisco never revealed the bacillus, but this is negative evidence and must be taken for what it is worth. Such conditions are favorable to the multiplication and rapid development of the germs when once introduced. The first great requisite in the suppression and prevention is a correct early diagnosis, something that is often hard and sometimes impossible until cultures have been made and inoculation practiced. The first case may be an ambulant one and no suspicion of its nature exist until suddenly it takes a violent form and dies, or it may recover, sowing the seeds of contagion which will produce a harvest of death. Death is the better ending, for then the alarm is sounded. Even in the ordinary forms the diagnosis is difficult. It has to be differentiated from malignant cases of malaria typhus, and perhaps also from recurrent fever. Mild cases may be taken for venereal buboes and other inflammations of lymphatic glands. Skin lesions in plague may be mistaken for anthrax, and pneumonic plague for croupous pneumonia. If the diagnosis of all diseases were made with scientific exactness or if all known means of diagnosis were used this condition would not obtain and the first cases would be discovered. Kinyoun gives interesting examples from San Francisco and Hongkong of the difficulties of diagnosis and mistakes made and calls attention to the danger of spreading the infection by these cases. While the ambulant type is rare, during the pre and post epidemic period there are no doubt numerous septicæmic cases which are overlooked and pass for some other disease which they may resemble. These are one of the great causes of the spread of the disease and should be watched carefully.

A knowledge of the means of communication is of primary importance. It was formerly thought to be highly contagious and that the disease was spread by contact and breathing the air of sick rooms. This is no doubt true of the pneumonic type, in which the sputa is laden with the germs, and in the septicæmic, where all the discharges from the body are infected, but in the bubonic it is but slightly contagious. In the recent outbreak in Sydney, Thompson reports that out of 139 cases the patients inhabited 124 different premises. Fifteen cases were therefore secondary. A close analysis of these goes far to prove that the infection came, not from the preceding case, but from the same infection as the primary. In San Francisco the secondary cases have been very few, cases 116–118 no doubt contracting it from 115, as it was pneumonic and they freely associated with the patient before it was properly diagnosed. Some reporters in their enthusiasm to prove the rat the means of communication minimize the danger of contact and cite the fact that physicians and nurses seldom contract the disease in a hospital. This is true, but the conditions are different, just as the conditions are different in experiments with the germs in laboratory and in their natural haunts. Conclusions drawn from these are not entirely safe, although of great advantage if properly appreciated. The sanitary condition of the hospital would go far to prevent the spread, besides the doctors and nurses would naturally use care. It is not safe to proclaim it but slightly contagious. As yet we do not know entirely its natural history, and great mischief might be done by lessening the fear of people. The disease is no doubt carried in infected clothing if they are confined in a closed chest, but if properly aired are safe. Kilasarto cites the case where the clothing of a soldier dead of plague was sent from Formosa to Kobe, and the plague soon after attacking those who opened the box and handled the clothing. To what extent merchandise is a carrier is uncertain, but no doubt such as is exposed to rats may harbor the germs for a time. Cargoes of hay and grain have been supposed to spread the disease, and one can well believe it possible, as the urine and feces left by the infected rat harbor myriads of virulent bacilli.

Simpson says: " It is a curious fact that the manner in which a locality becomes infected can seldom be determined, and in the investigations which have been carried out to decide this question the cases which were supposed to be the first are almost invariably found to be preceded by other cases, until the record goes back to a time when nothing can be definitely settled." From earliest times rats have been linked in the popular mind with plague. It was noticed that there was often a severe epizootic before the epidemic. Often for a few weeks before the disease broke out in man there would be a wholesale mortality among the rats. Losing all fear of man, they would come out and die by thousands upon the streets. He further says: " The importance of the dissemination of plague by rats is only gradually being appreciated. It is a well-attested fact, and has in numerous localities been the precursor of an extensive outbreak. The rat plague is also slow in its progress, and it must not be imagined that it is just previously to the rats dying in their hundreds and thousands that plague is imported into the locality; the origin has to be sought at a much earlier period, when mortality occurs only among one or more rats in groups. It was a well-known fact among the ancient Hindoos that when rats began to die in a house it was time for the inmates to leave their abode. Rats when they sicken with plague leave their holes and come out into the open. They look ill and are in a dazed condition, their eyes are watery and bleary, their coats are partially deprived of hair, and they hobble about with difficulty and stagger and fall. They make very little attempt to escape when approached, and their behavior is so extraordinarily different from what is usual that the illness from which they are suffering may at once be suspected."

Rocker states that in Yunnan the mortality among the rats was particularly noticeable. Pringle says that " in the Shurwai Himalayas, where in 1864 plague was epidemic, the rats quitted the various villages in anticipation of the advent of the disease, and that the people, taught by experience, on seeing this exodus recognized it as a warning." Rats always leave a place where there is high mortality; so no doubt it was this fact rather than foresight that caused the exodus. Thompson, in his report of the second outbreak of plague in Sydney, traces patiently and with much skill the connection between the disease in man and rats, and proves satisfactorily that the vast majority of the cases were from rat infection. It is impossible for us in San Francisco at the present to trace with the same exactness the relation between the cases and that of rats. Some time in the future this may be worked out, but it can now be stated as a fact that in most of the cases infected rats have been found in the immediate neighborhood. Our cases have been largely confined to a few blocks, but few occurring outside. In cases 97, 98, 115, 116, 118, in the Italian quarters in September, 1903, and February, 1904, there were infected rats caught in the immediate neighborhood. In our inspection of Chinatown during the first days of January, 1904, we found in one particularly dirty area a large number of dead rats. These were taken to the laboratory and examined and found infected. The place was thoroughly renovated, but we were not surprised that several cases of plague occurred, although we had seen none for over two months.

We have had in all three cases originating outside of San Francisco. How they contracted the disease can be only conjectured. Case 100, a robust blacksmith, lived about 3 miles inland from Martinez, a port town 35 miles from San Francisco. In front of this place many foreign ships lay at anchor. The patient had not been to San Francisco for several weeks and there was no known communication. He lived with his brother over their shop, which was insanitary and rat infested, but no history of any dead ones. After his death, and the disease recognized, the building was burned. Two months later (case 102) another case appeared from the same valley, although several miles farther up. He had a few days before being taken sick been in San Francisco, getting men for the railroad work, and no doubt visited infected portions of the city and may have contracted it there. The third case (119) died in Concord, 4 miles from the first case in that valley. She had not been from the farm on which she lived for several weeks, and the sanitary conditions were good. It was reported, however, that the horses at the stable had stamped to death some rats, good evidence that the rats were diseased. These cases being near where vessels from foreign ports land and load with grain, it is not impossible that a rat infection was started, although no diseased rats had been found.

The means of communicating the disease from rat to man is one of interest. Simond succeeded in experimentally transmitting the disease from rat to rat through infected insects, whereas Nutall failed in this and claims that the rat flea will not bite man. Raymond and Gauthier in five experiments inoculated healthy rats by means of fleas which had bitten infected ones. Fourteen out of 16 rat fleas when placed on man, after twenty-four hours' fasting, bit readily. These experiments, carefully made and positive in results, far outweigh negative evidence and establish the possibility of the flea being the intermediary. J. Ashburton Thompson, in his admirable report, strongly argues that the rat and flea are responsible for the spread of the disease. As a theory this accounts for some things that were dark before. If the disease is spread from the rat direct to the man, why is it that more often than otherwise, as we see the bubonic plague, but one member of the family is afflicted? This is easily answered if the flea is the intermediary. The frequency of the bubo in the groin could thus be accounted for, for if the germ was introduced through a wound, the hand being the more frequently wounded, the axillary glands would be affected more frequently. For the flea to be the intermediary it is not entirely necessary that the flea bite the subject. It might be crushed and the bacilli escape that way and gain entrance through scratching or an abrasion in the skin. We have made no special study in San Francisco of this question, but fleas are plenty and freely pass from domestic animals to man.

The study of the cause, propagation, and spread of the disease is of vital importance, but the practical application of the truths learned or theories advanced is equally so. Believing that it is a filth disease, and that it affects the rat and is spread by him, we are following quite closely the course laid out by other places where it has been successfully combatted, notably in Japan. In San Francisco we have our greatest trouble in finding cases early. They are generally Chinese, and they are exceeding loath to report their cases. This is partially on account of the dread of an autopsy, but more on account of the disturbance of their social and business relations. A death from plague means the destruction of much of their rubbish and a thorough cleaning up and disinfection, and they will do anything to prevent this. Their general claim is that the victim came from another place, frequently from outside, and died as soon as he arrived.

Investigation shows the deception. In order to find cases early we have the infected district divided into subdistricts, with an inspector for each. Each room has a number on its door, and the inspector has a book in which is entered the house number and the number of each room in that house, and the name of its occupant and his business. At each visit of the inspector he records conditions and the tenant's whereabouts. In this way we keep track of the inhabitants and sometimes find a case early. There being a great number of rooms, it is impossible to get around daily, so cases are not found as promptly as could be desired. The difficulty of finding them is increased by their shifting the sick off to another room, often an unused one. The Oriental Hospital is visited daily and all patients examined. None are treated there without our knowing it. We have also a watch kept on the drug stores, and anyone seen taking medicine to a room is reported, and in this way sick ones often located. When a case is found, the premises are vacated and thoroughly disinfected and renovated. The valueless contents are destroyed, the rest disinfected with sulphur and formaldehyde. We are negotiating now for a portable steam disinfecting apparatus, with which we can do more effective work with clothing, bedding, etc.

As soon as a place is condemned the tenants are notified to remove. If a lodging house, this is but a short job, and the wreckers at once take charge. All wooden floors and partitions are taken from the basements into the streets and burned, and a few inches of the earth carted to the bay after being disinfected. Oftentimes wells and cisterns are found beneath the houses which are filled. Broken drains are repaired. The walls are thoroughly washed with a disinfectant from a force pump, and lime is freely used. The back areas, which have been filled, often for four stories, with wooden structures, are cleaned out and the refuse burned. Where it can be safely done enough is burned on the ground to disinfect it. This work is not confined to buildings where cases have been found, but is going on constantly and systematically throughout the Chinese quarters. As soon as the work of tearing out is done repairs are allowed, but only concrete or cement can be put in, and walls are to be made rat proof. In the areas a concrete floor can be laid, and a one-story structure with glass roof put in. The city authorities, looking to the future safety of the city, and believing that if the rats are all killed more will come and that safety lies in not giving them hospitality, are at the present time perfecting an ordinance requiring all buildings in the future to have rat-proof floors and walls in the basements.

Hand in hand with this work goes the destruction of rats. We do this with traps and poison. The sewers are kept baited, but it is difficult to use poison with safety around the Chinese quarters. For the past two months we have used the Danyz virus. Assurances and demonstrations that it is harmless to man has given them confidence and they are using it with reported good success. The rat is sly and cautious and is with difficulty induced to eat the bait, as he has no lack of food, and it will be with only long, systematic, and united effort that we can succeed against him. Their destruction on shipboard should be an international arrangement, and no rat under any circumstances should be allowed aboard. With the plague running riot as it is in the Far East and scattered generally throughout the world, there is no certainty of any port being long free if they are allowed transportation. The disease is no doubt present in the rats often months before it is manifested in man, so that there is no certainty that a vessel is from a clean port. Fumigation and rat guards should be insisted upon. In San Francisco we find but very few infected rats and only in the section where human cases have occurred. None are found along the wharves, nor are rats plentiful there at present, showing the result no doubt of our war on them. That the germs can have no lodgement, the streets are being covered with a smooth asphalt pavement, and are sprinkled and swept three times a week. The sewers are being put in as perfect a condition as possible and are constantly being flushed. We have had but very little experience with the serum as a preventive. Our cases being scattering, and generally but little knowledge of who has been exposed, it has been impossible to use it.

The necessary work to be done in an infected city is (1) early discovery and public recognition of the disease; (2) hospital for care of sick; the surveillance of contacts; (3) division of suspected district into sections, each under the care of a trained inspector who makes daily inspections; (4) a thorough renovation and disinfection of all infected places, including all personal effects; (5) prophylactic inoculation; (6) destruction of rats and other vermin and bacteriological examination of as many as possible from different parts of the city and making all buildings rat proof; (7) continuation of work and surveillance.

As yet we are not entirely successful, but our work is far from done. Not until the terribly insanitary condition is removed will we feel safe, but the work toward that desirable point goes steadily on. All departments, national, State, and municipal, are working with a will and in perfect harmony. We have a permanent organization, composed of the several health departments, supervisors, and mercantile associations, which meet every two weeks to consult, advise, and push on the work. These meetings are open and free to all. No secrecy is maintained, and we court publicity and suggestions. We recognize the work we have to do and are earnestly trying to do it. Admitting the probability of more cases, at the same time we feel that with the continuation of our work we stand in no danger of an epidemic, but we warn our sister seaports to be ever on the guard and be prepared to crush the disease before it gains a foothold, if perchance a case occurs, for with the disease in all parts of the world and on the increase, no city with foreign trade is safe.

APPENDIX B.

REPORT OF THE COMMITTEE ON TUBERCULOSIS.

By C. E. COOPER,
Secretary, State Board of Health, Colorado.

Appendix B.

REPORT OF THE COMMITTEE ON TUBERCULOSIS.

By C. E. Cooper, *Secretary, State Board of Health, Colorado.*

Mr. President: Your committee on tuberculosis begs leave to make the following report. This report is based upon two fundamental principles which are generally accepted, namely:

(*a*) Tuberculosis is a communicable disease and, like other communicable diseases, can be prevented.

(*b*) Tuberculosis can be cured.

In support of the first we have at our disposal numerous statistics proving beyond doubt its truth. As to the second, it is a matter of what may be rightly called common occurrence.

Anyone who has much to do with the tuberculous knows the disease is curable. No statistics are necessary to uphold this latter statement. We have all seen consumptives, many dispaired of and many in the initial stages, recover; and as our knowledge advances we are not only benefiting the afflicted more than formerly, but are getting more permanent cures. Still the highest art in medicine is not to cure, but to prevent.

The theory of heredity as the chief cause of the spread of tuberculosis needs only to be mentioned. The few supporters it has have offered no evidence in its favor save a few isolated cases. In the majority of their cases post-natal infection can not be excluded. There is, however, no question of the great importance the hereditary predisposition plays.

The announcement of his views by Von Behring concerning the infection of the child population through infected milk has not as yet received sufficient confirmation at the hands of other investigators to be considered in this report. Then, too, the transmission of the disease from animals to man, though very important, is so small in comparison with the transmission from man to man that it also will not be touched.

With the view of ascertaining the opinion of the State health officers, the following circular letter was forwarded to each:

"Dear Doctor: I trust that it will not inconvenience you too greatly to supply the information requested upon this sheet. As chairman of the committee on tuberculosis of the Conference of the United States Public Health Officials with the United States Public Health and Marine-Hospital Service I wish this information to embody in the report of this committee. Thanking you in advance, I beg to remain,

"Yours, very truly, C. E. Cooper."

"1. Does your State require the report of cases of tuberculosis? If so, I would be pleased to receive any information concerning the same, blanks, instructions to health officers, statistics, etc. If not, do you believe that the report of cases of tuberculosis and based thereon an educational feature instructing the consumptive in the care of himself, the sputum, and methods to prevent the spread of the disease, also instructing the public as to its association with the consumptive, would be beneficial and tend to stop the spread of the disease?

"2. (*a*) Is there a dread on the part of the public of your State of associating with the consumptive?

"(*b*) Do consumptives find it difficult to secure proper habitation and surroundings owing to this dread?

"3. Do you believe that consumptives would accept and follow instructions from boards of health of an educational nature?

"4. Do you believe that the relation of the consumptive with the public would be less strained by instructing the public in the modes of the spread of tuberculosis, and that as long as the consumptive cares for himself properly there is no danger in associating with him?"

In answer to the question, "Does your State require the report of cases of tuberculosis?" the following States reply in the affirmative: Washington, Vermont, Minnesota, Nebraska, Kansas, New York, Michigan, Maine, and Maryland.

Louisiana requests, but does not require such report.

Negatively: South Carolina, North Carolina, Massachusetts, Pennsylvania, Florida, Iowa, Colorado, Missouri, Rhode Island, Connecticut, California, Arizona, Arkansas, Ohio, Illinois, and New Hampshire.

Those believing that the report of cases and an educational feature would be of benefit are South Carolina, North Carolina, Massachusetts, Pennsylvania, Florida, Iowa, Colorado, New York, Rhode Island, Michigan, Maine, Connecticut, Arizona, Arkansas, Ohio, and Illinois.

"2. (*a*) Is there a dread on the part of the public of your State of associating with the consumptive?"

Answered affirmatively: North Carolina, California, Massachusetts, Florida, Colorado, Indiana, Michigan, Maine, Connecticut, Louisiana, Arizona, Arkansas, and Ohio.

Negatively: Washington, Vermont, Pennsylvania, Maryland, Iowa, Missouri, Minnesota, Nebraska, Kansas, New York, Rhode Island, Illinois, and New Hampshire.

"(*b*) Do consumptives find it difficult to secure proper habitation and surroundings owing to this dread?"

Answered affirmatively: North Carolina, California (in the southern part), Massachusetts, Colorado, Indiana, Connecticut (sometimes), Arizona, and Illinois (sometimes).

Negatively: South Carolina, Vermont, Pennsylvania, Florida, Maryland, Iowa, Missouri, Minnesota, Nebraska, Kansas, New York, Rhode Island, Michigan, Maine, Arkansas, Ohio, and New Hampshire.

"Do you believe that consumptives would accept and follow instructions from boards of health of an educational nature?"

Answered affirmatively: North Carolina, Washington, California, Vermont, Massachusetts, Pennsylvania, Florida, Maryland, Iowa, Colorado, Missouri, Indiana, Nebraska, Kansas, New York, Rhode Island, Michigan, Maine, Connecticut, Arizona, Arkansas, Ohio, Illinois, and New Hampshire.

Expressed as doubtful: Louisiana.

"4. Do you believe the relation of the consumptive with the public would be less strained by this education?"

Answered affirmatively: South Carolina, Washington, California, Vermont, Massachusetts, Pennsylvania, Florida, Iowa, Colorado, Missouri, Minnesota, Indiana, Nebraska, Kansas, New York, Rhode Island, Michigan, Maine, Connecticut, Louisiana, Ohio, and New Hampshire.

Negatively, Illinois.

Expressed as doubtful: Maryland, North Carolina, and Arkansas.

From the foregoing it is evident that the health authorities see the necessity of immediate action and that there is an unanimity of opinion as to the method of procedure. Of course there is a variety of opinions as to the manner of educating the consumptive, and as this is an important feature it would be better to leave it to a committee to prepare, as is provided in this report.

How can tuberculosis be prevented? Dependent as it is upon the bacillus tuberculosis, any manner of attack must be made with the object of restricting the opportunity of this bacillus from infecting the healthy members of society, either by removing it from the surroundings of the unaffected, by diminishing its virulency, or increasing the resistance of the individual. The choice of means is evident. The simplest, most efficacious, and the most readily executed is to prevent the opportunity of infection. This can only be done by preventing the deposit of the germ where it can infect. In other words, those infected with the micro-organism must so conduct themselves that they become to the least extent a focus for the transmission of their disease. The tuberculous must be taught that they are not only capable, but are at the present time the most prolific source of the spreading of consumption. They must also be taught that they are in duty bound to protect the rest of humanity from their disease, the best methods of prevention, and the danger of reinfecting themselves.

The public health authorities are, on account of their office, the ones to teach these lessons. Upon them falls the work and responsibility of offering to the consumptive a means of protecting others and of bettering his own condition. The authoritity given them by the laws of their respective States enables them to insist upon and compel the observance of these means by the individual and to, if necessary, call to their assistance the powers of the courts in enforcing their regulations.

In some localities, especially where consumptives are numerous, a condition exists tentatively known as tuberculophobia. An unnecessary dread on the part of the public of associating with the tuberculous, and in view of the great prevalence of tuberculosis and at present the lack, except in some communities, of any attempt at prevention, further than the issuance of general instructions to the consumptive upon the care of himself, disposal of his sputum, etc., a normal dread is well founded. By that we mean a fear of an intimate association. When we see, however, that fear carried to the extreme, we can most readily appreciate the harm and injustice it does to those unfortunate members of society—the tuberculous individuals. Any unnecessary hardship forced upon the consumptive by the public should be corrected, as far as possible, by the same sources that correct any unnecessary exposure of the public to the infection of tuberculosis.

The causes underlying this condition are many. The most important are—

(*a*) The propagation of the truth among the public that tuberculosis is a communicable disease.

(*b*) The consumptive himself who refuses to conduct himself, either through ignorance, sensitiveness, or indifference, in a manner least liable to infect others.

(*c*) Commercial reasons. By this we mean the injury to certain small commercial enterprises, such as public hostelries, boarding and lodging establishments, that the presence of the tuberculous invites.

Further, in view of this opposition of the public toward the consumptive, we have a corresponding disregard of the consumptive for the public. Both should receive consideration at the hands of the health authorities and, though apparently incompatible, are, when analyzed, capable of being most amicably compromised.

The result of the analysis might be expressed thus: The consumptive is entitled to all of the privileges ordinarily enjoyed by the noninfected, in so far as the enjoyment of these privileges does not subject the noninfected to infection, and the public has the right to demand from the consumptive a mode of deportment which will minimize the opportunity of his transmitting his infection. Such does not require an unreasonable sacrifice of any privilege on either side.

A further reason for the authoritative interference between the consumptive and the public is because the eventual outcome of the struggle will result in either the isolation of the tuberculous, as has been advised by some, or in their being forcibly compelled by a restriction of freedom to live in such a manner that they can not subject others to their infection. Either alternative would be deplorable, especially so because of the opportunity offered now, when this great question is in its infancy, of effecting a compromise.

We have attempted to show in as concise a manner as possible the necessity for authoritative interference in tuberculosis.

Before any attempt to prevent or control the spread of tuberculosis can be instituted, health officials must know who is tuberculous; therefore a report of cases forms the foundation upon which any plan of prevention is based. States should make it compulsory of every physician to report at once his cases in the same manner and for the same reason that other communicable diseases are reported, and your committee begs leave to offer the following form for such report. It provides for the name, age, sex, address, date, and place where the disease was contracted, form of the disease, duration, signature of attending physician, and countersignature of the local health officer, and is addressed to the latter. It can readily be changed, without interfering with its usefulness, to suit the system of collection of such records in each State and still retain its essential points. It is neither a burden upon the physician to compile nor asks any question not usually known by the physician. The object in offering it is to secure uniformity in the report of cases, so that reliable statistics can be collected.

With this report as a foundation, your committee begs leave to recommend an educational feature, comprising as pupils both the consumptive and the public. We believe an effort made in educating the consumptive in the nature of his trouble, the methods of its transmission, and the means of preventing its spread will result in much benefit, and is at present the only feasible means offered. All other plans, such as isolation, specific legislation, partial quarantine, etc., striking at the consumptive's personal liberty, though probably from a scientific standpoint of superior efficacy, still, from a politic standpoint, are useless, because of the resentment on the part of the consumptive and the public that would surely be associated with them, and especially because of their most radical departure from our present customs, which would excite such resentment.

Education should proceed from those having authority. It should be uniform as far as possible in substance and phraseology. It should be simple and contain the essentials, not the details, of what science has given us. Too much detail will cause confusion or misinterpretation of the question by the laity. Your committee therefore begs leave to recommend that any educational feature should consist of the following:

(*a*) Methods of transmission and infection of tuberculosis.

(*b*) Methods of disposing of the sputum.

(*c*) Personal hygiene of the consumptive.

(*d*) Duties of the consumptive toward the public.

(*e*) Danger of autoinfection. (This we believe to be of great assistance in promoting the adoption of preventive measures, as it appeals to the consumptive in a most personal manner.)

(*f*) Education of the public in the method of transmission and prevention of tuberculosis.

(*g*) Education of the public in its relationship with the consumptive.

In order to secure as much uniformity as possible in the educational matter, your committee would suggest the appointment of a special committee to prepare it, or instructing your committee on tuberculosis to draft such matter and report to this body at its meeting in 1905. In the meantime individual boards of health could continue their efforts in this directon. Results can not be looked for at once. It will take time to accomplish this end.

As to the manner of execution of this educational effort, it seems to this committee no better nor simpler way exists than taking the report of cases as submitted by the physician as a basis of information and personally addressing the individual, inclosing such educational matter as may be deemed necessary. This will bring the subject to the immediate attention of the consumptive.

However, the education of the public is associated with many obstacles, in the first place to gain an interest in the question. This will be by no means easy, as the public have too many matters to attract their attention without considering the communicability of tuberculosis. Again, the public is numerically a large body, and not so easily reached as the consumptive.

The daily press seems to be the most readily accessible instrument for this purpose. It reaches the multitude, is usually willing to devote some space upon request, and an occasional column prepared by boards of health would come under the notice and be read by many. Antituberculosis societies, lectures under the auspices of various philanthropic institutions, clubs, church societies, etc., will reach many not otherwise interested; and lastly, the physician, to whom the laity appeal for enlightenment, can with very little effort spread the doctrine of the contagious character of tuberculosis and offer the means of prevention. Physicians, and a great many of them, do not take the interest in this question which its magnitude requires. Many are too pressed with other professional duties to devote the time necessary in an educational effort and need urging by our health officers.

Experience with other communicable diseases has demonstrated the value of fumigation in removing foci from which the disease may spread. Much has been written about the danger that lurks in the dust-laden air of the streets, but recent scientific studies and statistics show conclusively that the danger has been greatly overestimated; (*a*) because of the dilution of the bacilli by the vast volume of air, and (*b*) because of the destructive action of sunlight on the germ. It has been shown, as might be theoretically reasoned, that it is within doors that the great danger of contracting tuberculosis exists. Here the bacilli are thrown into the atmosphere by each paroxysm of coughing, sometimes by direct expectoration and find their way to the floor by gravitation, are not usually subjected to the action of sunlight, and are thrown back into the atmosphere and inhaled whenever disturbed by sweeping or dusting. It therefore is quite evident that houses inhabited by consumptives and in turn infected, unless purified by some form of fumigation, renovation, or sterilization, remain as foci of contamination and give rise to other cases. Your committee therefore submits for your approval the following: It is the sense of this body that, in order to prevent the spread of tuberculosis, subsequent to every death from such disease the premises occupied should be thoroughly fumigated.

Even though the highest art in medicine is to prevent, we must not overlook the necessity of offering a cure when possible. This, no doubt, most often comes under the province of the attending physician and seldom enters the field of the health officer; still tuberculosis is an exception to the ordinary communicable diseases in this respect and gives the authorities an opportunity to exercise both prevention and cure. The most advanced idea in the treatment of tuberculosis is that of the sanitoria, unfortunately available only to those of means. The poor are excluded. In view of the excellence of this treatment, your committee would recommend that States build these institutions within their borders for the care of the indigent poor. It is obvious that the same results can not be expected from these as from those situated in better climatic surroundings—such, for instance, as the one built by this Government in New Mexico.

Representing, as we do, the two most noted regions in this country for the cure of tuberculosis, namely, Colorado and New Mexico, we believe we express the opinion of the medical profession of our States when we say that it is far better for the poor consumptive to remain at home, surrounded by friends and comforts, than to seek his health in other parts, denied these associations and forced on account of limited means to forego the comforts of his home. This is especially true for those unable to work or who have reached the stage of incurability.

This is an opportunity for a well-deserved and necessary charity.

These institutions are by no means impossibilities; we have their analogues in insane asylums, poor farms, orphanages, etc. In some States they are in operation, in others in contemplation, and still in others not even thought of.

The diagnosis, especially in incipient cases, frequently offers many difficulties. The success of laboratory diagnosis in diphtheria urges upon your committee to offer for indorsement by this body a recommendation that States establish laboratories for the examination of sputum. The State, however, should not be called upon to furnish a diagnosis unless the physician is willing to reciprocate by reporting his cases.

REPORT OF TUBERCULOSIS.

To the Health Officer of ——— *(State)*, ——— —, *190–*.

Sir: I hereby report, as prescribed by law, a tubercular infection existing in the person of ——— ———. Address, ——— ———.

Age, ——; sex, ———; race, ———; occupation, ———.

Form of the disease.

a. Chronic ulcerative phthisis.
    First stage.
    Second stage.
    Third stage.
b. Fibroid phthisis.
c. Acute miliary tuberculosis.
d. Tuberculosis of upper air passages.
e. Tuberculosis of skin and appendages.
f. Acute pneumonic phthisis (galloping consumption).
g. Tuberculosis of alimentary tract.
h. Tuberculosis of the genito-urinary tract.
i. Tuberculosis of nervous system.
j. Tuberculosis of osseous system.

(Indicate one or more forms existing by canceling with pen the forms not affecting the person.)

Duration, ——; where contracted, ——— (County); ——— (State).
Date contracted, ——— —, ——.
How long a resident of (State), —— years, —— months, —— days.
Complications, if any exist.
Give the names of towns in which patient has resided since coming to (State).

——— ———, M. D.
(Address:) ——— ———.

——— ———, *Health Officer*.
(Jurisdiction:) ——— *City*, ——— *County*.

Physicians will please forward this report to local health officers, who will in turn countersign same and forward to the State board of health.

APPENDIX C.

PREVENTION AND RESTRICTION OF SPREAD OF EPIDEMIC DISEASES.

By J. N. HURTY,
Secretary, State Board of Health, Indiana.

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PREVENTION AND RESTRICTION OF SPREAD OF EPIDEMIC DISEASES.

By J. N. HURTY, *Secretary, State Board of Health, Indiana.*

This report treats only of pneumonia and influenza; typhoid fever and diarrheal diseases; measles, mumps, and whooping cough; diphtheria; scarlet fever; coughs and colds, and smallpox.

GOOD HEALTH—RESISTANCE.

Boards of health should continually lay before the people the facts as to how they must live in order to secure and maintain high resistance against infectious and all other diseases, for this is the first step in prevention and might be termed "primal prevention." The best time to fight epidemics is before they arrive, and the first line of works is the teaching of temperate living, abundance of outdoor exercise, plain diet, avoidance of crowded and illy ventilated places, thorough ventilation of offices, homes, schoolrooms, public gathering places, and especially of bedrooms. We should ceaselessly present these and all other requirements necessary to gain the end desired. Good health, with its accompanying high resistance, is first; but, while gaining the same, we could go for the microbes.

PNEUMONIA AND INFLUENZA.

The committee calls attention to the fact that State boards of health seem not to be combating these two dangerous diseases according to the degree that is demanded. It appears unnecessary to review the statistics and comment upon the sequelæ of these maladies, and therefore we will present—

Restriction of spread.—It is notorious that physicians do not warn their grip and pneumonia patients to properly care for their oral and nasal excrement. This error of omission it is the duty of boards of health to correct. It is doubly necessary that ambulant cases should collect and destroy the infection-bearing secretions. Then let health rules require and let health circulars teach this point, and also let it constantly be kept before the public. Cleanliness of the patient and sick room and final disinfection hardly need to be mentioned.

TYPHOID FEVER AND DIARRHEAL DISEASES.

These are classed together because the separate infective organisms have for their habitat the human intestinal tract and because these organisms are alike borne to us in food and drink. We do not forget the possibility of our breathing the infectious organisms and the fluids of the mouth and nose washing them into the stomach; also that flies and other insects might plant them upon our food.

Restriction of spread.—Not until *all* intestinal, renal, oral, and nasal excrement is collected and destroyed from *all* persons, *all* the time, under *all* circumstances, will we practice rational and thorough restriction of spread of typhoid fever and diarrheal diseases. It is perhaps unnecessary to say it will be a long time before this is done, but the remark makes it possible to emphasize the fact that until it is done the maladies named will continue to plague us.

Probably 50 per cent of typhoid cases are not diagnosed, and of those diagnosed, how many are taught, directed, or compelled to destroy their urine and feces? In what percentage of cases are diarrheal discharges disinfected? Canvass the practitioners of any city, and what per cent will say they always carefully direct the disinfection of diarrheal stools? We must remember, too, that not less than three persons in every thousand carry typhoid germs and discharge them haphazard. How many among the apparently well will carry the Shiga bacillus?

It is, of course, the duty of boards of health to teach and require the disinfection of all dejecta from known diarrheal and typhoid cases, but it is equally their duty to teach and eventually require the sanitary care of all human excreta.

MEASLES, MUMPS, WHOOPING COUGH.

Early diagnosis is the first point to attend to. The infected person being discovered, it remains to isolate, destroy all discharges, and then well disinfect in person and apparel.

DIPHTHERIA.

It is to be noted that while the diphtheria death rate has been lowered, the number of cases are probably as formerly. While it is certain that isolation of a case, with disinfection when well, will restrict spread from any known case, still isolation and disinfection seem not to have reduced the cases. Therefore something more is required. That more is the general use of antitoxin for immunizing in the families and neighborhoods where the disease exists, and the making of cultures from the throats of the most remotely suspicious cases. Medical school inspection must be universal. The two points of reasonable immunizing and early recognition should be persistently taught by health boards.

SCARLET FEVER.

The organism is unknown and we possess no serum, and diagnosis is by symptom only. Epidemics of scarlet fever do not proceed from severe and unquestioned cases which are rigidly isolated and finally disinfected. The mild cases are usually responsible for the spread. Early recognition is therefore the first requirement. This may only be secured by informing the people how necessary this is for their protection, and the medical schools and self-effort among physicians must quicken the ability to know the disease when in mild form.

COUGHS AND COLDS.

It will be admitted that coughs and colds are transmissible and to be avoided. Their sequelæ are certainly to be feared. It would be interesting and valuable to know how many foot-pounds of human energy are lost annually on account of coughs and colds. The infection is widespread, yet children afflicted should not be allowed in schools, for transference is easy. Badly ventilated, spit-loaded trolley and steam cars are good fields in which to acquire colds. For the prevention and restriction of coughs and colds "primal prevention" must be assiduously preached.

SMALLPOX.

This is the easiest disease of all to prevent. Isolation, pest-house care, disinfection, red flags, and the like are of no moment to the successfully vaccinated. Germany, notably, has set the example. Boards of health should ceaselessly advocate compulsory vaccination. With mild unrecognized cases of smallpox traveling in every direction, it is plain that quarantine of the known cases will be of little avail. When protection by vaccination is lost to a people, then smallpox will come.

APPENDIX D.

PRINCIPLES OF THE PREVENTION OF THE INTRODUCTION AND SPREAD OF YELLOW FEVER.

By EDMOND SOUCHON, M. D.,
President, Louisiana State Board of Health.

Appendix D.

PRINCIPLES OF THE PREVENTION OF THE INTRODUCTION AND SPREAD OF YELLOW FEVER.

By Edmond Souchon, M. D., *President, Lousiana State Board of Health.*

The cardinal and ideal principle to prevent the spread of yellow fever in a locality is to make that locality mosquito proof, so that if a case be introduced there will be no means to transmit it.

The problem is an engineering one altogether. It consists, first and foremost, in a perfect and complete system of waterworks extending to the very last houses on the outskirts of the locality, so that all cisterns, barrels, tanks, and water containers shall be done away with. This represents at least seven-eighths of the battle.

Next comes the paving of yards with seamless pavement, such as Schillinger, as this does away with small cavities and depressions in yards which, together with tin cans and broken jars and bottles, etc., are considered such fine and most frequent places for the breeding of mosquitoes.

These two factors represent at least 90 per cent of the battle against the Stegomyia, which, it should ever be well borne in mind, is specially a house and yard mosquito, only about 10 per cent of them breeding in gutters and streets against 90 per cent in the cisterns, yards, etc.

A proper system of drainage, sewerage, and paving and gutter sweeping will do away with the possibility of still-water collections, large and small, from forming and becoming the breeding places of Stegomyiae.

There only remains to see that no tin cans, no broken jars and bottles, etc., are at hand to make sure that there is no possibility for mosquitoes to breed, and therefore for yellow fever to spread if a case has been introduced.

The problem is not a very easy one, because of its cost and because of the great difficulty of killing all eggs of mosquitoes, as admitted by Harvard and most writers on the subject. Habana is the only place we know of where the ideal foregoing conditions are met, and yet there are still mosquitoes there, although nothing like the number that existed before.

The next best plan is to destroy all the mosquitoes in all the houses and destroy all their breeding places inside and outside of the houses.

No better rules can be followed than the following, issued by the United States Department of Agriculture:

"You are responsible for the mosquitoes in your own house and dooryard. Read the rules carefully:

"1. Mosquitoes breed only in water, usually fresh standing water in artificial places.

"2. Mosquitoes occur in the vicinity in which they breed. Invasions from long distance are exceptional.

"3. The young mosquito or 'wiggler' lives in water at least ten or twelve days.

"4. Although the wigglers live in water, they must come frequently to the surface to breathe.

"5. Coal oil on the surface of the water prevents the wigglers from breathing.

"6. Destroy the breeding places and you will destroy the mosquitoes.

"7. Empty the water from all tubs, buckets, cans, flower pots, vases once every forty-eight hours.

"8. Fill or drain all pools, ditches, and various excavations, as post holes left unfilled, etc.

"9. Change regularly every day all water needed in chicken coops, kennels, etc.

"10. Treat with coal oil all standing water which can not be screened or drained (1 ounce of oil will cover 15 square feet of surface). The oil does not affect the water for use if the water is drawn from below.

"11. Put wire netting over cisterns, wells, and tanks of water in everyday use.

"12. Places in which it is undesirable to place oil, such as watering troughs for stock, lily ponds, etc., can be kept free of the wigglers by putting in gold fish. The nymphs of dragon flies and tadpoles of frogs also feed on the wigglers.

"13. See that the plumbing about the place is in perfect order. Prevent leakage of pipes or clogging of valves.

"14. Inspect all cesspools and see that the covers are absolutely tight.

"15. Clean away all weeds, grass, and bushes about ditches, ponds, and other possible breeding places, since these afford a hiding place for the adult mosquitoes.

"16. Clean up vacant lots and back yards of all cans, tins, bottles, and rubbish.

"17. First do away with or treat all places where mosquitoes are known to breed, and then begin work on places where they might breed.

"18. As a citizen of your community you should feel a personal responsibility for the destruction of the mosquitoes in your district, and seek to cooperate with your neighbors in the work of doing away with breeding places. Inspect and treat with coal oil gutters, culverts, ditches, manholes, catch-basins, etc., along the roadside. Manhole covers should be screened.

"19. Where oil is applied to standing water it must be distributed evenly over the surface. Use a hand syringe, or, if the area is great, a knapsack sprayer.

"20. Houses should be cleared of all winged mosquitoes by the burning of insect powder. The mosquitoes will fall to the floor and should be collected and burned.

"21. Relief in any community or district depends entirely upon the cooperation of the members of the community."

To these most valuable recommendations must be added those made by Doctor Tabor in his able address in Austin last March to the health officers of Texas, which are as follows:

"Have sanitary inspectors appointed and secure the services of inspectors who will inspect. Inspectors who will go to the front or back door of a residence and ask if the premises are in a sanitary condition usually meet with affirmative answers, and proceed to the next house. Such inspectors are worthless. They should request permission to enter and investigate the yards personally. A sufficient number of inspectors should be employed to visit each house twice weekly.

"Have your city council enact an ordinance prohibiting the use of water barrels or prescribe penalties for persons using them without screening and oiling the barrels. Make it a penalty for any person to use barrels or other vessels for water who permit mosquitoes to breed in them.

"Have your city council enact an ordinance requiring all old, unused cisterns and wells to be filled. The unused cisterns harbor mosquitoes all winter and are the greatest of all breeding places for them in the summer.

"Cisterns in use should be screened always or treated to oil as suggested before.

"If you find objection raised to the use of oil, suggest that minnows or small fish be placed in them. They will feed on the wiggletails and eggs and prevent the production of mosquitoes.

"Don't overlook the elevated cisterns and water tanks along the railways and around cotton gins and mills.

"Ordinary ponds and pools which never go dry and are large enough to contain fish are not breeding places for mosquitoes, as the fish destroy the larvæ, but all weeds, grass, and brush around the edges of the water should be kept cut away."

A most important preventive measure is to see that all cases of fever from any cause whatever are placed under a well-tucked bar from the very first minute of its discovery until the end of the third day at least. Thus, if the fever was one of yellow fever, no mosquito could reach it to become infected and then infect other persons. Of course all mosquitoes in the bar must be killed.

If, in spite of all efforts, a case of yellow fever should appear in a locality, the patient should at once be placed under a bar, being careful that no mosquitoes are in the bar.

The openings of the room in which the patient is to be placed should be closed as tightly as possible, all the cracks closed by pasting paper over them, and sulphur should be burned in the room for two hours. Use 2 pounds for every thousand cubic feet. While the room is being fumigated all the openings should be screened with fine-wire gauze. There must be a double-wire door where the room is entered.

If for some reason pyrethrum powder is used it must be well borne in mind that 1 pound is to be used to every thousand cubic feet and that the fumes only stupify the mosquitoes, which fall to the ground, where they must be swept and burned before they revive.

The adjoining rooms must also be fumigated with sulphur, and all the breeding places inside and outside the house must be destroyed as directed above.

All persons who have been in the house must be looked up and kept under observation for five full days. The nonimmunes especially should be sought for and strictly observed.

A house to house inspection should also be made of the whole locality, so as to ascertain if there are other cases. All cases of fever of any kind must be barred at least for the first three days.

Stamping out of an epidemic depends upon the discovery of all the cases, the barring and screening, and upon the destruction of all the mosquitoes and of all their breeding places inside and outside of the houses, in all houses. This is best reached by dividing the locality into districts, which are gone over daily by inspectors.

Regarding the vaccine and antitoxin of yellow fever, the French commission makes the following statement:

"A preventive injection of serum heated for five minutes at 55° C. confers a relative immunity, which, followed by inoculation with a very small quantity of virus, may become complete.

"The injection of defibrinated blood kept in the laboratory under liquid vaseline for eight days, at least, confers a relative immunity.

"The serum of a convalescent is endowed with clearly preventive properties.

"The immunity conferred by the serum of the convalescent is still in evidence at the end of twenty-six days.

"The serum of a convalescent appears to have therapeutic properties."

Although considered only now, quarantine is, in the present condition of almost all localities, the great protection against the introduction of yellow fever in a locality.

The great majority of sanitarians familiar with yellow fever are agreed that when yellow fever reaches a locality it has been introduced by a case.

It is difficult to estimate correctly the percentage, but many authorities say that it is 90 and some say 95 per cent, whereas the other causes of introduction, mosquitoes, etc., are only 5 or 10 per cent.

It is also noteworthy that the cases which introduce the fever are in the great majority light cases, which easily escape the inspection of the officers, unless the thermometer is used, as it should be.

It is also recognized by almost everybody now that although the yellow fever is most commonly introduced in a locality or on a ship by a case, yet it is transmitted and spread to other persons through the agency of the mosquito.

The cardinal principles of quarantine, therefore, are the disinfection of the ship or cars by sulphur to destroy the mosquitoes and the detention of all on board the ship or cars for at least five full days after the completion of the disinfection.

An immense stride has recently been accomplished in maritime quarantine by disinfecting vessels at the ports of departure and counting each day of the subsequent voyage as a day of detention, so that when the vessel arrives at its destination without any sickness on board it is only detained long enough to make five days from the port of departure. If she has been five days on the voyage, she is not detained at all. At all events, she is disinfected again upon arriving at Southern ports as a matter of additional precaution.

Vessels which have been more than ten days on the voyage after disinfection at the port of departure are disinfected and are detained five days, because during these ten days a light case may have developed and recovered so as to escape all measures of detection and yet have infected the mosquitoes which may have been hatched on board.

This procedure of disinfection at the port of departure has sounded the death knell of quarantine (since quarantine is truly detention) and has signaled the triumph of sanitation.

For many years past, since about 1886, the Louisiana State board of health have passed regulations whereby detention of fruit vessels was done away with, since the detention of a cargo of fruit meant its destruction.

The cardinal principle was that the fruit vessels were to avoid all causes of infection. The principal regulations were that the crews of fruit vessels rigorously be prevented from going ashore, that the vessels would carry nothing but fruit and specified freight, and, finally, that they would carry no passengers from infected ports.

Fruit vessels must not remain at the wharf longer than is necessary to unload and load quickly. Cargoes must be waiting for them.

The fruit companies readily agreed to leave out passengers, since they were the greatest danger; because a ship arriving with a case of fever on board was detained at the quarantine station, and consequently the cargo was heavily damaged or lost.

Passengers from the interior are allowed from noninfected ports, but they are required to remain two days in the port before embarking, so that with about three days required to cross over the five days of incubation will be covered.

In Habana no passenger from any suspected or infected port is permitted to take passage for the Gulf ports until he has been five days in Habana.

In recent years an important safeguard has been added by placing marine medical inspectors on board of fruit vessels carrying passengers or going to infected fruit ports. Their main duty is to take the temperature of all on board in the evening and to see that the regulations of the board are observed.

The present conditions of maritime quarantine make it almost perfectly safe under the administration of able and careful officers.

The conditions of land quarantine are, on the contrary, quite unsatisfactory, in spite of all the ability and care of the officers in charge, because of the impossibility of efficiently guarding day and night hundreds of miles of land, especially in a level country with shallow or narrow rivers.

All that can be expected of land quarantine is to reduce the risk to a minimum by guarding railroad tracks, wagon roads, and ferries. Almost all those with experience in this kind of work are agreed that under good and earnest management the risks may be reduced to about 75 per cent, but no more, leaving 25 per cent of risk of infection against none at all, we may say, in maritime quarantine.

The first difficulty is when to proclaim land quarantine.

It is a recognized fact that when a case of yellow fever is reported in a locality there have been a number of cases preceding that one and coexisting. Hence the risk in not imposing quarantine after the first case has been reported, or putting on the quarantine after the infection has penetrated into healthy localities, as was the case last year in Texas.

The first measure to be taken in land quarantine is to stop railroads from selling tickets until detention camps have been established at the quarantine lines. Simultaneously, the railroad tracks should be guarded, also the wagon roads and the fords.

The other regulations of land quarantine are, in a general way, the same as those of maritime quarantine—i. e., the destruction of mosquitoes in passenger and freight cars, and the detention of passengers in detention camps for at least five days. The crews of cars are exchanged at quarantine line.

The windows of cars running through an infected territory shall be screened

Trains from noninfected territories shall not be interfered with, provided they do not stop in infected territory except for water and coal, and provided they take no one on board.

Certificates of immunity shall not be accepted, because so many are obtained under false pretenses or under a false name. This last season in Habana a man was found with yellow fever who had come from Progreso, under the name of another. If he had not been poor, and for that reason was sent to the general hospital, he would not have been discovered and might have infected Habana.

Since that occurrence certificates of immunity are only granted in Habana to persons personally known to the health authorities that they are residents of Habana and truly immunes.

The certificates of consuls are most unreliable, for reasons similar to those given above. No statements under oath or affidavits should be accepted.
permitting persons from an infected territory to do their quarantine in a non-

A remarkable improvement is being made just now in land quarantine by infected territory. For instance, a person from Vera Cruz, Tampico, Victoria, Linares, etc., is permitted to go to Mexico City, San Luis Potosi, or Torreon, there to report daily for five days to an inspector of the United States Public Health Service or of the State of Texas. Upon arriving at the border he will not be placed in a detention camp, but upon the presentation of the proper certificate he will be permitted to go through. He must reach the border over noninfected territory. That time might be reduced by the time taken to reach the border, where his temperature shall be taken.

In Europe persons from infected ships or localities are permitted to go at once to their place of destination, provided they report there to the mayor or the health officer for a certain number of days. This was done also in Habana under American occupation. But while this procedure is safe enough with the thoroughly efficient police of Europe and under military rule, it would be very unsafe in this country.

We may consider the advisability of permitting persons from an infected locality to enter a noninfected one by placing him under a heavy money bond to report to the health officer twice daily, so that it will be known as soon as he is taken sick.

The great point is to find out the cases as soon as they become ill. Sanitarians are not afraid of a hundred or more cases of yellow fever if they know where they *all* are and that there is not another. But they are in mortal dread of a single case if they do not know where it is and can not, therefore, take the proper measures to neutralize it.

Regarding the risks in baggage (fomites), we will here say that the risk from mosquitoes in baggage is very remote. Although it has been proven that mosquitoes can be conveyed in baggage, yet the instances are very rare. Experiments made at the Mississippi River quarantine station by Dr. John N. Thomas proves this also. They will not live in baggage more than three or four days in the summer months. However, since the mosquitoes caught in baggage while packing a trunk would be a house mosquito and, if from an infected house, probably an infected mosquito, it is well to look after them.

As to the conveyance of yellow fever by fomites, every year brings on convincing proofs that its risks are very small, if any. The management of yellow-fever cases on ships and ashore in Habana without any evil result, and the fact that some southern ports do not require the disinfection of baggage from infected ports without having as yet suffered from this procedure, is gradually and surely, though slowly, convincing the most scrupulous officers that there is no risk to their people in doing away with it.

When resorted to, the disinfection of fomites must be done by heat 250° F. for thirty minutes, or by formaldehyde in vacuo, or by immersion in bichloride of mercury 1 to 1,000.

Objects affected by heat, water, or bichloride, such as leather, should be disinfected by formaldehyde.

A point of great importance is that of the condition of the Stegomyia in the open—i. e., found outside of houses, on the streets, at the wharves on noninfected ships. It is held by almost all writers that the Stegomyia is a house and yard mosquito, seldom flying out, and that but a comparatively small percentage are bred outside of houses and yards.

It is very natural to consider the Stegomyia in the houses as being mostly infected, since sick persons usually remain in the house, but the conditions of infectibility of the Stegomyia in the open is quite the contrary.

The study of the fruit trade in New Orleans for a period of fifteen years shows that out of about 1,260 fruit vessels only 5 were stopped at the Mississippi River quarantine station with yellow fever on board, and out of these four were directly traced to the shore.

If the mosquitoes on board of the fruit vessels were infected, there would surely have been more than one case of yellow fever in 1,260 fruit vessels in fifteen years. Again, for a period of ten years not a single case of yellow fever originated in New Orleans, and during all that time fruit vessels from all sorts of ports were being unloaded by thousands of laborers without anyone presenting yellow fever, which certainly would not be the case if the mosquitoes on board were infected. By inference we would say that Stegomyia in the open—i. e., in the streets—are not infected, which explains the impunity of day intercourse with infected localities, provided the persons do not go into the houses.

This highly important point should be settled by some kind of practical experiments. In the meanwhile it is safe to destroy the Stegomyia wherever it is—in the streets, in ships, in houses, everywhere.

APPENDIX E.

REPORT OF THE COMMITTEE ON MORBIDITY AND MORTALITY STATISTICS.

By HENRY B. BAKER,
GARDNER T. SWARTS,
H. M. BRACKEN,
Committee.

APPENDIX E.

REPORT OF THE COMMITTEE ON MORBIDITY AND MORTALITY STATISTICS.

By HENRY B. BAKER, GARDNER T. SWARTS, H. M. BRACKEN, *Committee.*

In the formal opening address of the Surgeon-General at the first annual conference, reference was made to the distribution of labor between the division of sanitary reports and statistics of the United States Public Health and Marine-Hospital Service, and the United States Census Bureau, whereby "it has been found that there need be no duplication or interference by one bureau with the other; on the contrary, each will be helpful to the other. The Census Bureau, in addition to the decennial census, will publish an annual census of mortality and births, but the weekly and monthly reports will be published as heretofore by this bureau, and morbidity reports, which are so much desired and which will require special organization to procure, will be undertaken by the Public Health and Marine-Hospital Service."

This arrangement is most advantageous, and the two bureaus have effectively cooperated together and with the committees of various national organizations for important purposes relating to the improvement of vital satistics in this country. First of all comes the extension of the registration area—that is to say, the increase of the number of States having effective registration of deaths. In 1900 there were only nine such States; Iowa has just passed a law which should bring that State into the list, and it is evidently of pressing importance that the number shall be increased as rapidly as possible, so that the entire country shall be more satisfactorily represented by mortality statistics. To show how this is being furthered, and how harmoniously the various agencies are working together, we present here the circular recently issued by the public health committee of the American Medical Association, and approved, among others, by the committee of this conference:

COOPERATIVE AGENCIES FOR THE EXTENSION OF THE REGISTRATION AREA AND IMPROVEMENT OF VITAL STATISTICS IN THE UNITED STATES.

[American Medical Association: Dr. Frank Billings, Chicago, president; Dr. John H. Musser, Philadelphia, president-elect. Section on hygiene and sanitary science: Dr. Gardner T. Swarts, Providence, chairman. (Atlantic City, N. J., June 7–10, 1904.) American Public Health Association: Dr. Charles J. Finlay, Habana, Cuba, president. (Habana, Cuba, December —, 1904.) Conference of State and Provincial boards of health of North America: Dr. John N. Hurty, Indianapolis, president. United States Public Health and Marine-Hospital Service: Dr. Walter Wyman, Surgeon-General, Washington, D. C. Annual conference of State and Territorial health officers with the United States Public Health and Marine-Hospital Service. United States Bureau of the Census: Hon. S. N. D. North, Director, Washington, D. C.; Hon. W. A. King, chief statistician for vital statistics, Washington, D. C.]

To the Officers and Members of State and County Medical Societies:

This announcement is for the purpose of enlisting the cooperation of the organized medical profession of the United States in the improvement of vital statistics in this country, and especially to secure their aid in promoting the adoption of adequate laws for the registration of deaths in the States that do not at present possess such legislation.

The great importance of such laws to the country as a whole, to the individual States, and to private citizens, is indicated by the accompanying copy of a joint resolution passed by Congress and approved February 11, 1903.

Referring to this resolution of Congress, the American Medical Association, at its last annual session, at New Orleans, on May 5–8, 1903, and upon the unanimous recommendation of the section on hygiene and sanitary science, adopted the following resolutions:

"*Resolved*, That the American Medical Association heartily welcomes the action of Congress in promoting the adoption of complete and uniform systems of registration of vital statistics in the United States, and congratulates the American Public Health Association and the United States Census Office on their useful and effective cooperation for this purpose.

"*Resolved*, That the American Medical Association strongly urges on the State medical societies that special committees be appointed to advocate and secure the passage of satisfactory registration laws in States that do not at present possess them, that county societies support and aid in the execution of such laws as far as possible, and that physicians individually, throughout the United States, endeavor to promote the accuracy and value of the mortality statistics by giving clear and definite statements of causes of deaths on certificates of death.

"*Resolved*, That the committee on public health of the American Medical Association be instructed to cooperate with the corresponding committees of the American Public Health Association, the Conference of State and Provincial Boards of Health of North America, and with other committees organized for this purpose, and with the United States Census Bureau, the United States Public Health and Marine-Hospital Service, and other branches of the Federal Government, in the work of promoting the adoption of suitable registration laws and the extension of the registration area, the proper compilation and presentation of vital statistics by States and cities in weekly and monthly bulletins and annual reports, the use of the standard certificate of death, and also in further work relating to the extension, improvement, and practical use of the international classification of causes of death, the disposition of jointly returned cases, and preliminary work relating to its next decennial revision."

It is by the authority and under the express direction of the American Medical Association that this circular has been prepared by the committee on public health and recommended to the attention of the officers and members of all State and county medical societies in the United States. It has been approved by the special committees of various national organizations cooperating in this work and by the Federal authorities, and it is earnestly hoped that the entire medical profession of this country will give heed to this appeal and begin at once in vigorous systematic efforts in their own localities and through the perfected organization of the medical profession to advocate the adoption of proper methods for the registration of vital statistics, and especially for the immediate record of all deaths as they occur, with their causes, by means of standard certificates of death and burial permits.

The absolutely necessary requirements of a satisfactory law for the registration of deaths have been formulated by the special committee of the American Public Health Association, composed of practical registration and sanitary officials, in cooperation with the United States Census Bureau, and have been fully indorsed by the American Medical Association and other cooperating agencies. They have been specially issued by the Census Bureau, in the form of a pamphlet entitled "Legislative Requirements for Registration of Vital Statistics," for the use of all who may desire to improve methods of registration. This relates chiefly to deaths, but a second pamphlet on "Registration of Births and Deaths" contains drafts of model laws for both purposes.

The essential requirements of a law for the complete and thorough registration of deaths may be summarized below, as taken from the authorities cited.

It may be said, on the basis of all past experience in this country, that any proposed law or draft of a bill that does not comply with these fundamental requirements will prove inadequate and unsatisfactory in practice. Physicians should watch all such legislation and see that proper measures are adopted. It is better to have no law or attempt at legislation than one that is sure to produce only imperfect and worthless results, and that will merely bring registration methods and vital statistics into contempt.

These are the necessary provisions for a registration law for deaths:

1. Deaths must be registered immediately after their occurrence.
2. Certificates of death (standard form) should be required.
3. Burial or removal permits are essential to the enforcement of the law.
4. Efficient local registrars are necessary.
5. The responsibility for reporting deaths to the local registrar should be fixed.
6. The central registration office should have full control of the local machinery, and its rules should have the effect of law.
7. The transmission and preservation of returns should be provided for.
8. Penalties should be provided.

Include all of these provisions in a law and its results will be reliable; omit any one of them and the registration will be more or less defective and worthless.

It is not too early to begin work for the next legislative session. The first step, which should be taken without fail at the next annual session of the State medical society, is to appoint a strong committee—strong in interest in the improvement of registration and in ability to push the work, but preferably few in number—to organize the work in cooperation with the public health committee of the association and with the Census Bureau. This committee may correspond directly with Dr. Cressy L. Wilbur, expert special agent of the United States Census Bureau, Lansing, Mich., who represents the Government authorities interested in the extension of registration and is in direct touch with the public health committee in its labors in pursuance of the resolution of the association. Doctor Wilbur will advise with the committees of any State in regard to the details of a proper registration bill, and will, when necessary, personally appear before medical societies, health officers' associations, legislative committees, etc., as may seem to be desirable for the purpose of advancing this work.

Please begin at once, and, if immediate results should not crown the first efforts, have your committee reappointed at the next annual session and fight it out until every State in the Union shall have an adequate registration of vital statistics. Our sanitary progress and the prevention of disease and deaths depend upon our knowledge of mortality and sickness, and it will be a glorious achievement of the organized medical profession of this country if this grand result shall be brought about through its efforts.

Very respectfully,

The committee on public health of the American Medical Association:

HEMAN SPALDING, M. D.,
Chairman, Chief Medical Inspector, Chicago, Ill.
WM. C. GORGAS, M. D.,
Assistant Surgeon-General, U. S. Army.
W. H. SANDERS, M. D.,
State Health Officer, Montgomery, Ala.
J. N. HURTY, M. D.,
Secretary of State Board of Health, Indianapolis, Ind.
VICTOR C. VAUGHAN, M. D.,
Member State Board of Health, Ann Arbor, Mich.

Approved:

The committee on demography and statistics in their sanitary relations of the American Public Health Association:

William A. King, *Chairman, Chief Statistician for Vital Statistics, United States Bureau of Census, Washington, D. C.*

Cressy L. Wilbur, M. D., *Chief of Division of Vital Statistics, Department of State, Lansing, Mich.*

John S. Fulton, M. D., *Secretary State Board of Health, Baltimore, Md.*

Henry M. Bracken, M. D., *Secretary State Board of Health, St. Paul, Minn.*

Jesus E. Monjaras, M. D., *Mexico, D. F., Mexico.*

Frederick L. Hoffman, *Statistician Prudential Life Insurance Company, Newark, N. J.*

The committee on vital statistics of the Conference of State and Provincial Boards of Health of North America:

Irving A. Watson, M. D., *Chairman, Secretary State Board of Health, Concord, N. H.*

Charles A. Lindsley, M. D., *Secretary State Board of Health, New Haven, Conn.*

Peter H. Bryce, M. D., *Secretary Provincial Board of Health and Deputy Registrar-General, Toronto, Ontario.*

Cressy L. Wilbur, M. D., *Lansing, Mich., Honorary Member.*

The committeee on morbidity and mortality statistics of the Conference of State and Territorial Health Officers with the United States Public Health and Marine-Hospital Service:

Henry B. Baker, M. D., *Chairman, Secretary State Board of Health, Lansing, Mich.*

Gardner T. Swarts, M. D., *Secretary State Board of Health, Providence, R. I.*

Henry M. Bracken, M. D., *Secretary State Board of Health, St. Paul, Minn.*

United States Public Health and Marine-Hospital Service—Treasury Department:

Walter Wyman, M. D., *Surgeon-General, Washington, D. C.*

United States Bureau of the Census—Department of Commerce and Labor:

S. N. D. North, *Director, Washington, D. C.*

William A. King, *Chief Statistician for Vital Statistics, Washington, D. C.*

As the committee of the American Medical Association has given its special attention to the extension of the registration area, the committee of the Conference of State and Provincial Boards of Health of North America has taken the matter of uniform and comparable forms of tables for statistical reports and bulletins as subject for a report, and the committee of the American Public Health Association will deal with matters of classification and with the direction of the general movement, it is hereby recommended that the committee of this official conference, besides cooperating with the other agencies, devote itself to the subject of morbidity reports and statistics, including their relation to mortality statistics.

There are at least three ways of beginning a movement for the systematic collection of morbidity statistics for the United States:

1. By taking up the work in one State at a time, selecting each time one in which some physician is sufficiently interested in the movement to devote to it that study and oversight necessary to inaugurate a successful system. In some States that physician might be a surgeon in the United States Public Health and Marine-Hospital Service.

2. A modification of the above-mentioned method would be to start with the one State, or more, in which morbidity statistics are now being successfully collected and use them so far as possible for national purposes of publication, at the same time appealing to the several State boards of health for their cooperation in inaugurating such statistics in their States, extending the system as fast as practicable.

3. The American Medical Association is now so well organized, and bids fair to be better organized, and the medical profession seems so much interested in sanitary movements for the public welfare, that an appeal to the parent association and to the several county associations affiliated therewith for cooperation and aid in reporting weekly the conditions of health under their observation, seems likely to meet with reasonable success.

4. A union of all the methods herein mentioned may meet with the best success.

APPENDIX F.

REPORT OF THE COMMITTEE ON LEPROSY.

By C. E. COOPER,
President, Territorial Board of Health, Hawaii.

Appendix F.

REPORT OF THE COMMITTEE ON LEPROSY.

By C. B. Cooper, *President, Territorial Board of Health, Hawaii.*

Some Facts Regarding Leprosy as it Exists in the Territory of Hawaii.

It is not the purpose of this report to present an exhaustive treatise on the etiology, pathology, and treatment of leprosy, but rather to deal with the history and facts presented by the disease in Hawaii.

GEOGRAPHY—TOPOGRAPHY AND CLIMATOLOGY.

The Hawaiian Islands lie just within the northern tropic, between 18° 54′ and 22° 15′ north latitude and between 154° 50′ and 160° 30′ of longitude west.

These islands, eight in number, comprise an area of 6,700 square miles and are of volcanic origin. A striking feature is the bold and rugged outline as seen from every point of view.

Hawaii contains the highest mountains of any island in the world—Mauna Kea, 13,800 feet. From the fact that these islands are just within the Tropics frost never occurs except at high elevations, and extremes of heat are never known.

From the mountainous character of the group a great variety of temperature is afforded, snow remaining on the highest summits the most of the year.

At sea level the average temperature is 74°, and on higher elevations almost any degree of cold you may desire. Herewith is appended the temperature summary of the average monthly and yearly temperature from 1883 to 1903, prepar by Government Meteorologist Lydecker, of the Weather Bureau, Honolulu.

TEMPERATURE SUMMARY.

Average monthly and yearly temperature, 1883–1903, Weather Bureau, Honolulu, Hawaii.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Yearly average.
1883	70.84	70.96	71.37	74.92	75.96	76.74	76.76	78.58	77.00	76.86	73.36	71.21	74.55
1884	69.94	70.21	71.89	71.12	73.03	77.15	77.42	78.08	77.86	76.41	73.66	69.62	73.86
1885	69.17	71.24	71.46	70.02	73.16	77.18	78.07	77.68	78.38	76.16	75.01	69.16	73.89
1886	69.70	71.60	71.34	73.16	73.79	75.91	77.13	77.35	78.88	78.21	74.48	71.47	74.43
1887	70.79	70.49	70.13	73.51	73.17	75.49	77.01	76.99	76.40	75.82	73.09	72.85	73.81
1888	70.34	68.45	69.77	73.34	73.87	76.79	78.04	77.61	77.92	78.14	75.44	73.91	74.47
1889	70.13	69.93	70.09	72.62	75.61	76.27	77.81	78.31	77.65	76.47	75.56	71.95	74.26
1890	71.34	71.38	70.63	72.88	74.18	76.37	77.13	77.23	77.52	75.31	73.22	71.55	74.06
1891	71.10	68.00	69.10	71.80	72.77	74.29	77.90	78.51	78.60	76.10	73.80	71.60	73.63
1892	68.45	71.79	71.70	73.22	74.20	76.35	77.01	77.82	78.28	75.48	73.90	70.80	74.08
1893	70.05	70.64	71.89	73.73	74.75	75.19	76.43	76.28	76.66	75.59	72.27	70.70	73.68
1894	70.27	69.61	70.39	71.68	73.72	74.87	75.75	76.00	76.56	74.75	73.03	70.83	73.12
1895	69.43	69.90	69.91	71.78	74.66	75.78	77.71	77.56	77.22	76.45	73.11	72.32	73.82
1896	70.69	70.87	69.47	72.89	74.71	75.21	76.75	77.82	77.07	76.03	74.57	72.55	74.05
1897	69.74	72.24	72.47	73.28	73.82	75.48	76.83	77.43	76.80	76.13	72.96	71.25	74.08
1898	71.00	68.80	69.90	71.20	73.50	75.00	76.60	77.20	77.10	76.20	74.90	70.60	73.50
1899	70.40	71.90	71.20	72.70	74.20	75.30	77.00	77.30	77.10	75.70	73.60	72.20	74.05
1900	70.50	70.55	71.80	72.80	74.90	77.60	78.50	79.00	78.36	76.90	74.12	71.60	74.72
1901	71.30	68.70	72.50	73.00	74.80	77.40	77.81	78.70	77.20	75.90	73.90	72.20	74.45
1902	70.80	69.50	70.81	71.80	73.40	75.82	77.61	78.50	77.20	75.80	73.30	70.01	73.71
1903	69.80	67.32	67.30	71.91	74.20	76.01	77.60	77.90	77.50	75.10	73.60	72.20	73.37
Normal	70.27	70.19	70.72	72.54	74.11	76.01	77.28	77.71	77.49	76.17	73.85	71.46	73.98

Rainfall at Punahou (weather bureau), Honolulu.

[Elevation, 50 feet; exposure, southwest.]

Month.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
January	1.45	0.42	0.99	7.18	2.41	2.20	3.67	2.12	8.85	2.88	4.21
February	1.16	1.98	1.32	6.02	13.28	.75	10.71	5.15	4.41	14.91	11.91
March	5.81	3.16	1.97	2.66	2.45	.60	10.59	1.38	1.07	1.31	2.91
April	3.76	6.00	1.47	3.75	[2.80]	1.65	5.25	1.59	2.40	2.32	2.53
May	.87	11.50	2.51	5.80	[1.70]	1.32	2.25	.68	5.80	2.22	.40
June	2.19	1.75	1.44	1.64	[1.30]	1.90	1.88	.91	1.88	.64	.98
July	2.98	5.05	1.04	1.31	(1.80)	1.43	2.77	1.44	1.62	.73	1.14
August	1.57	2.94	1.95	1.74	(3.70)	1.34	2.20	1.38	2.22	1.60	.32
September	.97	2.25	6.09	1.42	1.71	2.19	1.20	1.25	1.31	1.73	1.47
October	5.05	.72	2.40	2.62	1.59	1.55	2.16	4.64	2.55	1.18	2.62
November	1.00	4.00	10.48	17.01	4.01	2.54	2.77	.80	1.05	9.93	10.35
December	3.50	4.35	4.95	7.33	1.16	6.75	2.31	1.95	3.36	1.95	3.50
Annual	30.31	44.12	36.61	58.48	37.91	24.22	47.76	23.29	36.52	41.40	42.34

Month.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	Normal.
January	2.79	2.38	(3.00)	6.26	1.22	0.74	3.10	0.30	4.05	3.01
February	2.63	3.09	(2.25)	8.49	4.01	1.14	7.96	1.25	5.86	5.41
March	2.05	6.50	(2.20)	12.70	4.94	1.67	4.12	11.67	1.03	4.04
April	1.77	3.84	1.46	2.42	1.07	5.23	3.11	1.57	2.35	2.82
May	1.35	1.31	1.55	1.35	2.44	1.60	3.23	1.34	1.86	2.55
June	1.52	1.59	1.44	2.90	1.14	.88	1.42	1.19	1.31	1.49
July	1.55	.56	1.31	1.63	.42	2.59	1.53	2.87	2.08	1.79
August	2.97	3.68	1.23	2.08	1.53	2.00	1.05	1.74	2.48	1.99
September	4.34	.64	3.41	1.28	.80	1.55	.85	2.27	5.74	2.12
October	1.36	3.57	1.81	2.16	4.02	6.88	4.14	2.59	2.17	2.79
November	4.36	(3.50)	2.07	1.64	.67	11.30	3.34	9.80	2.26	5.14
December	12.43	(6.75)	.84	2.03	1.75	1.67	9.98	10.20	1.44	4.41
Annual	39.12	37.41	22.57	44.94	24.01	37.25	43.81	46.79	32.68	37.58

Annual average is made up from annual total.

The air, from the fact of its coming over thousands of miles of ocean, is remarkably pure, the climate of the islands being cooler by 10 degrees than that of other countries in the same latitude. This is due not only to the trade winds, but also that the ocean itself is cooled by the return current from the region of Bering Straits. The contrast in climate between the windward and the leeward sides of each island is striking, the eastern slopes being windy and rainy and heavily wooded, while the western coast enjoys a warm, dry climate, with more scanty vegetation. The rainfall in general is moderate, the average for all the islands being about 50 inches a year.

DISCOVERY OF LEPROSY.

It is not entirely certain at what period the disease commonly known as leprosy invaded these islands. The credit of the discovery of the existence of the disease has been given to several persons. It is generally conceded that it existed prior to 1848; the attention of the people does not appear to have been called enough to comment on the disease before that date. The first well-authenticated case, according to the late Superintendent Myers, of the leper settlement, appeared in the person of a high chief named Naea, on the island of Maui. Naea's case attracted the attention of the King, Kamehameha III, the chiefs and people, all of whom were nonplussed as to what it could be, and finally called it pehu (dropsy) for want of a better name. A foreigner who had seen leprosy in other countries advised the King of the serious nature of the disease and urged him to advise Naea to isolate himself with his household. This he did in the neighborhood of Wailuku, Maui, where he finally died.

After his death some of his servants died of the disease, and the natives, in speaking of the cases, would say, "Ua make no aia i ka mai alii," which translated, reads, "So and so had died of the chief's disease." Foreign sailors first called it "Chinese pox," saying that they had seen the disease in China, and that it was incurable. From that the natives dubbed the disease "Mai pake" (Chinese sickness), under which name it is called to this day by Hawaiians.

By general consent of the best-known observers, leprosy was introduced with the coolie trade, first inaugurated in 1840. It is contended by others that it might have been brought through whaling ships having mixed crews picked up from tropical islands and South America, in all of which places leprosy existed.

Among others mentioned to have been among the first to discover the disease are the names of Doctor Hillibrand and Doctor Baldwin. It was not until 1860 that especial attention was called to the prevalence of the disease. The growth was so rapid that the medical men and authorities became so impressed with the danger that threatened the islands that in the legislature of 1864–65 a law was passed providing for the compulsory segregation of all persons afflicted with leprosy.

LEPER STATION.

The first place selected for a settlement to which leprous patients should be taken and cared for was at Palolo Valley, in the district of Honolulu. After the selection of this site great objection was raised by people residing in that valley, of whom there was a considerable number, and the board of health finally decided to seek another place.

The next place chosen was at Kalihi, in the suburbs of Honolulu, near the sea, which place was reported on favorably by a committee of the board of health, under date of July 6, 1865, but it was soon discovered that the location was not suitable for such an institution, and attention having been called to the land at Kalaupapa and Kalawao, on the island of Molokai, and as this location seemed much better suited to the purpose than any other which had been proposed, the matter was immediately decided upon, and within a few months the settlement was established at that place, where it has since been maintained.

The old place at Kalihi is now used as a detention hospital for the examination of leprous suspects prior to their final examination by the leper examining board, composed of a commission of five physicians, and on whose verdict the patient is declared either a suspect, nonleper, or leper, and dealt with accordingly.

During the period from the establishment of the Kalihi Hospital in 1865 up to its abolishment as a hospital in 1875, between 800 and 900 lepers had been examined and treated there. Quite a large number were released, owing to errors in diagnosis. Some 700 were sent to the permanent settlement at Kalawao, and a good many were also taken direct from the other islands where they were first apprehended.

A branch hospital was established at Kakaako, another suburb of Honolulu, in 1881, a medical officer being placed in charge for the purpose of carrying on original research and investigation, which place seven years later was abandoned and merged in the present site at Kalihi.

DESCRIPTION OF LEPER SETTLEMENT.

To Dr. W. J. Goodhue, medical superintendent of the leper settlement, I am indebted for much of the detailed information concerning the settlement.

The island of Molokai is about 28 miles southeast of the island of Oahu. It is a long, narrow island, striking due east and west 40 miles, with a width of less than 10 miles. The western half of this island is low, rolling pasture land.

with a very light rainfall, which accounts for its barren appearance. The eastern end affords a striking contrast to this.

Previous to 1873 the leper settlement was limited to Kalawao, or the eastern side of the peninsula, the western side being still held as of kuleanas or native homesteads; but in this year the board of health succeeded in purchasing the whole peninsula, leaving a very few scattered kuleanas, which were all bought up in 1895.

The western side of this peninsula includes Kalaupapa, the largest village, and located almost at the base of the tongue of land; Makanalua is the middle district between Kalawao and Kalaupapa, Iliapii following the western coast line north about halfway to the extreme northern point, where Kahili is located. Kalaupapa is protected from the strong winds which sweep over Kalawao almost nine months of the year by the walls of the extinct crater, Kauhako, which rises to an elevation of 490 feet above sea level. This tongue of land, projecting from the almost perpendicular cliffs at its base, which rise in lofty grandeur from 2,000 to 3,500 feet above it, extends in an almost straight line north about 2¾ miles to the point of the extreme end, where it is about 1 mile wide. At its base, following in a line almost due east and west with the rugged mountain range, the extreme width is about 3 miles, the pretty village of Kalawao, which includes the Baldwin Home for Boys, lying close in to the hills and forming the eastern boundary of the peninsula, which is locked in on every side but the south, or pali side, by the ocean.

Extreme isolation and consequent effective segregation is obtained through the natural fortifications of nature, which appear to have united in an awful upheaval to create this ideal leper asylum.

The northeastern coast line has an abrupt, rocky, and cliff-like formation. The ragged, forbidding contour gradually assumes gentler proportions on the western side from Iliopii to Kalaupapa, where there is a good landing, except during the occasional winter northwest windstorms.

The soil is rich and lies to a depth of from 1 to 3 feet over the lava rock underneath, which, being porous, affords excellent drainage, so that in unusually wet seasons the wet soil does not retain any injurious excess of moisture.

Grass grows luxuriously all over the peninsula. Indigenous trees are lacking, but when trees are planted and protected from wind they do extremely well. A good quality of firewood is available from the sheltered sides of each of the large valleys. There is quite a quantity of valuable taro land in these valleys, and an unlimited supply of the purest spring water, which is conveyed by an 8-inch pipe for distribution to the settlement.

There has only been noted one case of typhoid fever in the history of the settlement, and in that case the infection is supposed to have come from Honolulu.

The climate of Kalawao and Kalaupapa differ considerably. Kalawao being exposed to the full force of the northeast trade winds and nestling close in to the coast range, which reaches a higher altitude as it extends eastward, is colder and receives more rainfall, as well as being in the shadows cast by the hills certain portions of each afternoon. The rainy season usually begins in November and ends in February or March, although this year it began to rain in October and has continued up until the latter part of April.

To these unusual favoring conditions of continued dampness and cold winds which prevailed this winter Doctor Goodhue attributes the predisposing cause of the severe epidemic which he termed as "swollen-head fever," which swept over the settlement from November to February, numbering over 200 victims. As there was nothing to our knowledge in medical literature covering this disease, as president of the board of health I asked Doctor Goodhue to make careful notes and report officially to the board of health on the matter, which he has done, as follows, viz:

"This is the second epidemic of this kind to visit the settlement, the first occurring during the late Doctor Oliver's incumbency as medical superintendent, about four year ago, but of which he has unfortunately left no notes."

In conversation with the Reverend Sister Marianne, superioress of the Franciscan Order of Sisters in the Hawaiian Islands, who has, with a portion of the sisters labored for upwards of twenty years with the lepers and who is now and has been for sixteen years in charge of the Bishop Home for Girls at Kalaupapa, I learned that she had never seen this phase of the disease until the epidemic of 1900.

Doctor Oliver at this time also expressed himself to the sisters as puzzled over the "new disease," as he termed it.

Definition.—"Swollen-head fever" is an acute, epidemic, painful inflammatory leprous fever, in which the head and face become greatly swollen and in which the lymphatic and glandular system become characteristically involved, especially the cervical and sometimes the axillary and inguinal as well.

Eitology.—This ailment is a distinctively leprous fever of an acute congestive epidemic character, differing materially from leper fever in its symptoms, temperature curve, course, duration, prognosis, and treatment, but due to the same specific virus somewhat modified and more active. While the bacilli are not found normally in the blood of lepers, I was enabled to obtain a specimen from three of my most characteristic cases, in the blood of two of whom I was able to demonstrate the bacilli, and I am confident that during acute exacerbation of the temperature, when the patient's chill shows the activity of the elements of infection or invasion, that the bacilli are liberated in great numbers into the blood currents to be disseminated throughout the system. With more powerful lenses and improved methods of staining, sporulation of the bacilli lepræ will, I am quite sure, be demonstrated. In appearance, contagiousness and temperature resembling so closely erysipelas, I was led to search for the virus of this disease as well. While the affection proved itself to be very contagious, not one of the score or more of kokuas constantly exposed to it became infected, showing conclusively that leprous tissues are required for its propagation and activity. Further investigation on these lines will be made when opportunity offers.

Symptoms.—The onset is usually sudden and begins with a severe chill, during which the patient will tell you, as well as he can between chattering teeth, that he is "anu-anu."

This chill is succeeded in about half an hour by a rapid rise in temperature, the thermometer in the mouth registering between 104° and 105° F. About this time or a few hours previous the submaxillary and auricular glands on one side become enlarged and painful to the touch, as well as the skin all over the head and face.

Swelling begins on the head or face, or both, on the *same side as the enlarged glands*, and gradually extends to the other side, when the whole face may be so enlarged and disfigured as to be unrecognizable, especially in the numerous cases in which the patient's eyelids become so swollen that in many cases they can not be opened, and the unfortunate endures temporary blindness in addition to his other miseries.

About the third day the swelling extends to the glands of the other side of the face, and these, with adjacent tissues, reach their maximum size and severity in about three days more, when they remain stationary until between the eighth and ninth days. The swelling gradually subsides, the pain disappears, and the temperature, having followed very closely the glandular infiltration and swelling, rising rapidly to 104⅖°, or thereabout, with the first invasion and then jumping up to 104⅘° or 105° with the second invasion, drops rapidly to 99 or normal upon the first signs of subsidence of the inflammation.

In about 15 per cent of the cases, however, the axillary and inguinal glands become involved during or immediately after the subsidence of the primary swelling, diffuse hypodermic infiltration and invasion of adjacent skin and superficial tissues progressing rapidly and extending along the lymphatic channels to the extremities. Occasionally it is circumscribed and may encircle the arm or limb. The skin of the affected area is very much congested and sometimes strongly pigmented. Here numerous millet-seed to Lima-bean sized blisters form, which break and leave a raw, angry-looking surface, slow to heal. The temperature takes a fresh rise up to 102°, remaining almost stationary until the skin becomes nearly normal again. When this complication occurs, the patient is not convalescent for from ten days to two weeks later.

In the uncomplicated form the patient is convalescent from the acute symptoms in two weeks. Suppuration of the cervical glands may have occurred (occurred in 9 per cent of my cases), in which case convalescence is somewhat protracted; but in every instance the patient is slow to regain his former tone and vigor, and reconstructive tonics are required. After the fever has left the patient's hair all falls out and desquamation of the skin occurs on the face, neck, and ears.

Prognosis.—In the aged and debilitated the prognosis is grave. In strong children and adults the mortality was very low.

Treatment.—This was largely symptomatic. Antipyretic remedies, including frequent cold sponge baths for reduction of temperature. Careful attention to elimination through all the emunctories of the body, antiseptic dressing of any ulcerating surface or lesion of the skin with local applications of pyrogallic and solicylic acid ointments to reduce the inflammation and allay the pain. Finally some appropriate tonic to sustain the vital powers.

APPREHENSION AND EXAMINATION OF LEPERS.

Dr. J. T. McDonald, the bacteriologist and pathologist of the Hawaiian Territorial board of health, in an article under the title of "A diagnostic examination of 150 cases of leprosy," published in the Journal of the American Medical Association, faithfully portrays the methods as adopted and carried out by the board of health.

"With us in Hawaii the disease is on the decline, thus proving the wisdom of the policy of segregation established over thirty years ago. Our method of apprehending and dealing with leper suspects may be stated briefly as follows: The entire inhabited portion of the Territory is divided into twenty-six government districts, in each of which a competent resident practitioner is selected and appointed by the Territorial board of health as government physician, with a small annual salary. In conjunction with his private practice he is to treat the indigent sick free of charge, supervise sanitation and vital statistics, return monthly reports on health conditions in his district, etc., and last, but not least, he is to be on the constant vigilent outlook for lepers. In this latter duty there is placed at his disposal the active cooperation of the district deputy sheriff, who in many instances is the one who discovers the suspect and brings him to the attention of the physician. From these two officials, whose powers and duties in the matter are not optional, but mandatory, come most of the recruits for Molokai. A few of the patients, hidden away for years by friends, are already well advanced in the disease, but very many, and perhaps the majority, would 'pass in a crowd' unnoticed. These are the ones whom the government physician has held under suspicion and silent observation perhaps for months, and even for years, to study the progress and development of some slight and uncertain lesion regarded as of no importance by the patient himself, or perhaps by him entirely undiscovered.

"Arriving at Honolulu the suspect is placed in the leper receiving station, an inclosure of several acres containing cottages, wards, dispensary, etc., and situated in a quiet suburb some three or four miles from the business center of the city. He now passes under the care of the pathologist of the Territorial board of health, whose duty it is to supplement the work already begun by the government physician in formulating the history of the case, making a critical study of all symptoms, recording the status præsens, and demonstrating, if possible, the presence of the bacillus lepræ. After the arrivals have amounted to about twenty, the official examining board is called together in session at the station to make a final individual review of each case and pass on its disposition.

"As a means of diagnosis, first in importance stands the microscope. Although not regularly and scientifically demonstrated, on account of the universal failure both to obtain a pure culture and to infect any lower animal, yet it is now generally accepted the world over that the disease is due to the Hansen bacillus, precisely as tuberculosis is due to its own specific germ. The discovery of the bacillus lepræ in suspicious tissue is now considered just as legitimate diagnosis of leprosy as is that of the tubercular bacillus in the sputum of a suspected consumptive confirmatory of tuberculosis.

"A minute test snip of the suspected tissue is thoroughly triturated in a small mortar with a few drops of normal salt solution; a drop or two of this is placed on a cover glass, dried, fixed, and stained with Ziehl's carbol fuchsin in precisely the same manner as with tubercular sputum, bearing in mind the single fact that the bacillus lepræ both takes and gives up its stain more readily than the bacillus tuberculosis. Hence, in decolorizing, a very weak acid must be employed. Finally, contrast stain, mount, and examine with a one-twelfth oil immersion and a good light. Slides thus made from snips of typical nodules usually show the bacilli in incredible numbers, or rather quantities, as I have frequently observed more than half the field occupied by the bright red aggregations of cell masses, great irregular blotches of solid bacilli in myriads, with small groups and individual elements intervening.

"But, as has already been intimated, not all of the cases coming to the station show typical nodules. The majority present, it is true, in greater or less degree, one or more of the symptoms enumerated below, but frequently of so slight a nature as to render a positive diagnosis impossible without the aid of microscope. In these cases we have to select our test snip from some locality on a given subject where experience has taught us we shall be most likely to find the bacillus. It may be that the best we have is an area no larger than a dime on arm, neck, back, or thigh, which shows only a loss of pigment so faint as to be seen only in a favorable light.

"Slides made from here show a sorry contrast to the ones mentioned above, which present a demonstration at first glance. We now anticipate a long and tedious search. With the mechanical stage we go back and forth, to and fro, by the half hour. Not that a leucodermic spot or two is of such grave import, as it is not; but the patient has also, it may be, an open sore on the bottom of his foot, which, he gravely tells you, is from a cut on a sharp shell received a month or two ago while fishing, or there may be a slight atrophy in the palm of one hand. He is under suspicion. This impels one to persevere, when, perchance, one lonely red rod comes into the field; later, two, side by side; another long search and another single individual; and finally, perhaps, a group of from twenty to fifty. The diagnosis is no longer in doubt.

"Writers of leprosy literature tell us that open ulcers and their discharges are teeming with bacilli. In this I have been greatly disappointed. Take, for instance, the common plantar pedis ulcer, perhaps as large as a half dollar and half a centimeter in depth. I have so many times obtained negative results in smears from discharges or scrapings from its base that I have well-nigh abandoned their bacteriologic consideration. Another disappointment has been the mucus from the cartilaginous portion of the nasal septum. Even so high an authority as Koch has declared that the bacillus is to be found here early and constantly. After many faithful trials in every stage of the disease, I have found them so seldom that I now attach but little importance to it as a means of diagnosis.

"While the microscope is thus first in importance, it is in practice the last agent to be employed; it is only after all the various symptoms have been canvassed that an appeal to it is made as a court of last resort. What are the chief clinical features whose existence place the subject under suspicion? An attempt will now be made to present the more important ones, in the order of frequency as we have found them in our series of cases.

"The ancient division of leprosy into tubercular and anesthetic is unfortunate, as to terminology at least. The former, although used, of course, in its dermatologic sense, has long since been wholly appropriated by another entirely distinct disease, and its use in connection with leprosy ought to be abandoned. The latter term also is inapt, as in many well-marked cases of its type anesthesia is not a predominating symptom. There is but one leprosy; it shows in its manifestations a predilection for the skin and the nerves. That is all there is to the 'three types,' viz, 'tubercular, anesthetic, and mixed,' of authors.

"First, then, in point of frequency, comes the symptom or rather group of symptoms which, for convenience, we class as maculæ, occurring in 89 per cent of all our cases. Of these by far the most common are the leucodermic spots or areas which occur in all sizes and in all regions. They seem absolutely healthy to touch and feel; no elevation, no thickening, no inflammation; they seem to have lost a little of their pigment and that is all, unless, as rarely happens, they may be somewhat anesthetic. The patient, as a rule, knows but little of their origin or length of existence. A recent willing patient, an intelligent Hawaiian woman, a leper, anxious to go to Molokai to join her husband and her brother, detailed to me the symptoms of an erythema which occurred some four years ago with chilliness, slight fever and malaise; after these transitory symptoms had passed the areas occupied by the redness gradually and permanently lost a little of their pigment. It seems quite probable that such is the usual origin of the leucodermic spot. Taken in connection with other symptoms these spots and areas constitute a strong presumptive and confirmatory sign; taken alone, however, they are of very much less significance.

"To the other and rarer lesions grouped as maculæ even less importance is to be attached. They all belong to the array of indefinite 'might be's' daily encountered in every skin clinic, suggesting syphilis, eczema, or other ordinary dematoses and not exclusively charasteristic of leprosy. Repeated test snips with negative results have convinced me that, as a diagnostic sign, they are of much less value than is the leucodermic spot.

"Next in frequency come the so-called 'tubercular lesions,' the pathognomonic sign of skin leprosy. Under this head we group all patients who show the least trace of the true leprous nodule, however slight, and our records show that it was found in 111 cases, or 74 per cent. In many of these it was so slight as to readily escape notice without careful search.

"The histologic character of the lepræ nodule in and beneath the skin is very suggestive of granulation tissue; in fact, Virchow coined a term—granuloma—to express it; the growth consists of proliferated connective tissue cells and leucocytes, with fibrous intercellular formations and newly formed capillary blood vessels. Ordinarily the nodule varies in size from that of a half pea to half a walnut, but it may be as small as a pin head, or, on the other hand, of several inches in extent; it is irregularly circular or oval in shape, quite definitely circumscribed, with a well-rounded elevation, not particularly hard or resistant to feel, and in the lighter-skinned races with a tendency to brownish or coppery pigmentation. Its favorite region is the face, with a strong attraction for the lobule of the ear. I can not confirm the statement of authors who mention the elbows as a usual site; I have rarely found nodules in that region. Next to the face, the trunk may show them; less often the limbs. Instead of the nodule there is frequently found, as in the cheeks, for instance, quite an area of subcutaneous thickening, with perhaps slight elevation, the skin smooth, and rather hard and firm to the touch, as though there were just beneath it a layer of thin leather. This is believed to be of the same nature as the typical nodule, differing from it only in manner of disposition. The facial disfigurements with the classic leonine expression pictured in the books as typical leprosy are nowadays seldom seen at the receiving station, but are more common at Molokai.

"Another symptom of value is the falling of the eyebrows and lashes. Including all patients in which it appeared in any degree, the records show 94 cases, or 63 per cent. While many of these presented but a thinning of the eyebrows in the outer half, those recorded as 'entirely gone' and 'nearly gone' number 31. It seems to be an idiosyncrasy of the disease, occurring without any appreciable change in the skin from which the hairs fall. In this connection it may be remarked that the disease has an apparent aversion to the hairy scalp, as I have not seen a single case thus affected.

"We now come to an important group of symptoms more directly indicative of trophoneurotic leprosy as seen in atrophy of the palm and forearm, with resultant retraction of the first row of phalanges, combined with contraction of the remaining phalanges, constituting the well-named 'leper claw.' Like all other symptoms, this one exists in every degree of severity. It may be so slight that the patient himself has not noticed that one palm is thinner than the other; or, in another case, while he is unable to entirely straighten two or three of his fingers, he has not observed that the forearm is somewhat smaller than its fellow of the other side. This group of symptoms constitutes 32 per cent of all cases. Its usual manifestation, fortunately, is on one side only, but it is not rare to see both hands affected and to a marked degree, reducing the patient to the pitiable condition of almost total helplessness. In all these cases the ulner nerve above the inner condyle will be felt enlarged and firm as a cord under the examining finger.

"Next in order stands the plantar ulcer with a record of 26 per cent. Of variable size and depth, usually single, but sometimes multiple, it occurs most frequently on the ball of the foot, but also on the heel, and I have found it even on the bottom of a toe. As a clinical symptom it must be regarded as of great diagnostic value, as the lesion is very distinctive in its fully developed state and would hardly be produced in any other way. It might be of interest, in passing, to state that with the enforced rest, the generous diet, and local treatment many of them entirely heal in a few weeks' stay at the station.

"The text-books have brought into undue prominence the spontaneous amputation of fingers and toes from absorption of phalanges. It is not so common as is generally believed. We have grouped all cases which have shown even a tendency to this condition, as is the slight shortening of a phalanx, together with the very few in whom we have found parts of fingers and toes entirely gone, and our records show that these cases amount to only 16 per cent of all patients. I recall but one case in which we found a tolerably healthy-looking toe hanging by a short fibrous pedicle about 3 millimeters in diameter. Hence, while the symptom is a very characteristic and valuable one, it is not very common.

"Occurring with the same frequency as the above, in 16 per cent of all cases, is a condition of the hands, and sometimes of the feet, recalling an old classic name of leprosy—elephantiasis Græcorum. Instead of atrophies and contractions, we now find the wrists, hands, and fingers more or less enlarged, rather soft and flabby, with the skin smooth and always of a dusky purplish tint. Except the color, it suggests at first glance a well-marked œdema, but lacks, on palpation, the tense or boggy feel of that condition. Another interesting point is that the fingers invariably gradually taper toward their ends, so that about the nails their size is entirely normal. Test snips from several of these enlarged hands and feet have failed to show the bacillus.

"Another symptom of trophoneurotic leprosy is facial paralysis, which we found in 11 per cent of our series, in nearly all of which the side of the face was entirely motionless and expressionless, with the orbicularis palpebrarum greatly deficient in function.

"Finally, as to the universally recognized symptom of anesthesia. I have frequently found large anesthetic areas of skin to all outward appearance entirely normal, while, on the other hand, I have as often found areas which we would suppose should be anesthetic with sensibility unimpaired. With us its determination is attended with difficulties and uncertainties. Nearly all our cases are unwilling, unsympathetic patients. Many are overcome by fear, and are as profoundly startled by the touch of the head of a pin as by a prick of its point, while the answers 'Ae' and 'Aole' ('yes' and 'no') are given with utter lack of thought, care, or discrimination. It is certainly one of the most valuable symptoms, and is probably as frequent a one as authors have claimed it to be. Our own statistics on this point are so meager and worthless as to preclude mention.

"These few objective symptoms, while by no means complete, comprise the leading characteristics of leprosy, constituting an efficient aid to its recognition. The more so in that in every leprous case we have a combination of two or more symptoms, and often as many as five or six of them, illustrated on the same patient. Thus, we might have leucodermicmacules here and there on the trunk, the eyebrows thinned, a palm slightly shrunken, an enlarged and tender ulnar nerve, anesthetic areas, and a shortened toe all in the same patient, who would even then not only fail to attract the attention of his associates, but might consider himself in very good health.

"A brief summary of the above may be deduced as follows:

"1. The microscope is the supreme agent of the final diagnosis of leprosy. No patient should be committed to a segregated colony without a bacteriologic demonstration of the disease.

"2. Of clinical symptoms, maculæ, chiefly leucodermic spots, are found in 89 per cent of all cases.

"3. The lepra nodule found in 74 per cent is the one chief distinguishing lesion of skin leprosy.

"4. Thinning or complete loss of eyebrows and lashes is present in 63 per cent.

"5. Atrophic changes in hand and forearms, with retraction and contraction of fingers and enlarged ulnar nerve, in 32 per cent, a leading feature of nerve leprosy.

"6. The plantar ulcer found in 26 per cent, usually on the ball of the foot.

"7. Absorption of phalanges in 16 per cent, with occasional spontaneous amputation.

"8. Elephantiasis of hands and feet in 16 per cent.

"9. Facial paralysis in 11 per cent.

"10. The entire body should be carefully tested for anesthetic areas.

"11. Several of the above symptoms can be found in some slight degree at least in every leprous subject."

Doctor Goodhue has prepared this complete table, showing numbers of lepers admitted into Molokai leper settlement since its establishment, January 6, 1866. Out of this number there have been only 49 Caucasians.

Number of lepers admitted into Molokai leper settlement since its establishment, January 6, 1866, to April 25, 1904.

Year.	Admissions.			Deaths.			Discharged.			Remaining.		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
1866	102	39	141	21	5	26	......	......	......	81	34	115
1867	73	18	91	20	4	24	7	5	12	127	43	170
1868	93	38	131	18	9	27	4	3	7	198	69	267
1869	112	78	190	37	22	59	4	2	6	269	123	392
1870	31	26	57	37	20	57	......	......	......	263	129	392
1871	127	51	178	32	20	52	......	......	......	358	160	518
1872	56	35	91	44	19	63	......	......	......	370	176	546
1873	252	163	415	93	49	142	4	5	9	525	285	810
1874	46	32	78	94	47	141	12	4	16	465	266	731
1875	106	72	178	94	55	149	2	4	6	475	279	754
1876	46	29	75	75	44	119	4	2	6	442	262	704
1877	84	38	122	80	49	129	3	......	3	443	251	694
1878	114	95	209	70	41	111	......	......	......	487	305	792
1879	69	23	92	120	74	194	2	......	2	434	254	688
1880	34	17	51	96	55	151	......	......	......	372	216	588
1881	126	69	195	80	49	129	......	......	......	418	236	654
1882	52	18	70	81	30	111	......	......	......	389	224	613
1883	184	116	300	100	50	150	......	......	......	473	290	763
1884	71	37	108	92	75	167	2	......	2	450	252	702
1885	75	28	103	83	59	142	......	......	......	442	221	663
1886	33	10	43	63	38	101	3	2	5	409	191	600
1887	134	86	220	73	38	111	1	......	1	469	239	708
1888	345	226	571	149	87	236	2	10	12	663	368	1,031
1889	177	130	307	96	53	149	2	1	3	742	444	1,186
1890	109	76	185	107	51	158	......	......	......	744	469	1,213
1891	81	60	141	123	87	210	1	1	2	701	441	1,142
1892	60	45	105	99	53	152	......	......	......	662	433	1,095
1893	129	80	209	101	50	151	......	......	......	690	463	1,153
1894	77	52	129	109	50	159	......	......	......	660	463	1,123
1895	63	42	105	90	51	141	......	......	......	633	454	1,087
1896	95	47	142	67	47	114	......	......	......	661	454	1,115
1897	78	46	124	88	52	140	......	......	......	651	448	1,099
1898	42	33	75	68	46	114	......	1	1	625	434	1,059
1899	43	18	61	59	45	104	1	1	2	608	406	1,014
1900	79	30	109	87	47	134	3	3	6	597	386	983
1901	60	34	94	115	62	177	......	......	......	542	358	900
1902	56	24	80	61	45	106	......	......	......	537	337	874
1903	66	48	114	67	34	101	11	4	15	525	347	872
1904	31	15	46	25	9	34	1	......	1	530	353	883

Medical Superintendent Goodhue has also prepared this invaluable table of the present leper population of the settlement, giving genealogy of antecedents and relatives as regards the disease. Also giving proportion of various nationalities and relative proportion affected with the different types of leprosy.

	Males.	Females.	Total.
Present population	532	353	885
Father leper	30	34	64
Mother leper	27	36	63
Both parents lepers	13	11	24
Brothers or sisters lepers	106	94	200
Grandfather leper	12	10	22
Grandmother leper	6	7	13
Both grandparents lepers	3	1	4
Other relations	112	89	201
Nationality:			
Hawaiian	448	317	765
American	4	1	5
British	3		3
French	2		2
German	4	2	6
Scandanavian	2	1	3
Half-caste	22	29	51
Portuguese	11	1	12
Chinese	27	2	29
Japanese	4		4
Philippines	1		1
Porto Rican	2		2
South Sea Islanders	2		2
Character of disease:			
Anesthetic	114	67	181
Tubercular	186	124	310
Mixed	232	162	394

CHILDREN BORN IN THE SETTLEMENT.

The following gives the record from January, 1879, to April 25, 1904, of children born in the settlement, giving number of deaths, number discharged (sent to Kapiolani Home and outside relatives), number sent back as lepers, and number declared lepers in the settlement; also giving the present number of children alive in the settlement, with classification as to disease and parent age, leprous or nonleprous:

	Male.	Female.	Total.
Children born in the settlement from January, 1879, to Apr. 25, 1904	145	139	284
Deaths during same period	65	69	134
Discharged during same period	25	45	70
Declared lepers during same period	10	7	17
Sent back as lepers during same period	1	6	7
Present number of children nonleprous in settlement to-day	45	18	63
Born of parants both lepers	95	86	181
Born of parents both kokuas	7	8	15
Born of parents father a kokua, mother a leper	36	35	71
Born of parents father a leper, mother a kokua	7	10	17
Total number of children born in leper settlement of leprous parents declared lepers	11	13	24

Of the children under heading "Discharged" almost all the females were sent to the Kapiolani Home for Girls. What male children there were discharged from the settlement had to be sent to relatives or friends, there being no provision whatever for their support or education. Owing to this fact the great majority of male children stay in the settlement until they are men grown, in many instances eating and sleeping with the worst cases of leprosy, and in some cases (two within my personal knowledge) becoming lepers. It is only fair, however, to state that in these two cases just cited the parents of one were both lepers and of the other one parent only a leper.

There is urgent need of a home for these unfortunate boys, where they may be cared for and educated as well as removed from their present surroundings.

CONTAGIOUSNESS OF LEPROSY.

Dr. George Trousseau, a son of the famous French physician of that name, in his report as president of the board of health, in July, 1873, expresses himself as follows:

"Is leprosy infectious, or even contagious in the sense of the word—that is, by contact mere and simple? I emphatically say no. I am supported in that opinion by the whole medical world and by personal experience. Leprosy can not be communicated like cholera, yellow fever, smallpox, or typhoid fever. But provided there is a predisposition in a person, that person may contract the disease by various means—cohabitation, smoking out of the same pipe eating and drinking with the leper, etc. Therefore there is no danger for the foreign population, and the spread of the disease of late years should not destroy in any way the universal reputation of our most healthy climate. As far as the native race is concerned, it is quite different. The promiscuous habits of the natives, and their renowned hospitality are such that they are pretty sure to catch the least contagious of diseases. Isolation, and thorough isolation, as the board understands it and is carrying it out, will be one of the most efficient means of arresting the progress of the disease.

"The most obvious predisposing causes are syphilis and its nearest cousin, scrofula, also hereditary. A want of variety in the diet, mostly the use of salt provisions, and habitation in ill-ventilated or dark houses may also be blamed. The foreigner as a rule is not exposed to such influences, or rather to a less degree than the natives."

Experience during the thirty years which have elapsed since the expression of the opinion of Doctor Trousseau supports his contention that the disease is communicated principally by contagion or infection. To show how feebly contagious the disease is or the fact that some individuals seem to be immune I will cite the following cases reported from the leper settlement, at Molokai, of kokuas (helpers).

Of the whole number of kokuas (helpers) who have been inmates of the settlement at various times, numbering 138, only 59 have become leprous.

Doctor Goodhue states that it is impossible from the records to find how long each resided in the settlement, but in almost every instance it was not less than fifteen years.

Notes concerning the kokuas, with remarks relating to the interesting incidents in their histories.

"*Hoolemakani* (*female kokua*).—Arrived August 22, 1868, age 31 years, from Lahaina, Maui. Came as a kokua to her husband, a tubercular leper. Lived with him seven years. Remarried a kokua. Lived with him four years. On his death married a third time, a tubercular leper, with whom she lived four years.

"This woman has been doing the washing for the inmates of the Baldwin Home (a home for leprous boys and some of the worst cases in the settlement are inmates) for upward of twenty years. She is now 61 years old and is still doing washing for the Baldwin Home. She has had no issue by any of her husbands and is still in a healthy condition.

"*Hokela* (*female*).—Arrived May 15, 1873, age 10 years, with a leper mother. At the age of 16 married a kokua, with whom she lived five years. No issue. Then lived with a tubercular leper four years. Again married a kokua, who died after two years. She then lived with lepers promiscuously for about three years, then married a tubercular case in 1893, with whom she is still living. No issue and is still healthy.

"*Manua* (*male*).—Arrived September 28, 1876, age 59 years. Came as a helper to his wife, a leper from Lahaina, Maui. Lived with her eight years. He is now 87 years old and in a healthy condition.

"*Nailima Kuluena* (*male*).—Arrived July 10, 1879, age 34 years. Came as a helper to his wife from Honolulu, Oahu. Lived with her eight years. Remarried a leper; has lived with her now sixteen years. Issue, four male and two female children. Is still in a healthy condition.

"*Pahia* (*male*).—Arrived October 10, 1879, age 41 years. Came as a helper to his wife from Honolulu, Oahu, living with her seven years. Remarried a leper, with whom he has now lived twelve years. Issue, two female children. In good health.

"*Mu Kekoa* (*male*).—Arrived February 5, 1880, age 48 years. Came as helper to his wife from Honolulu, Oahu, living with her five years. No issue. Remarried a kokua; no issue."

It is a matter of record that leprosy became widespread during and after the smallpox epidemic in 1852, supposed to be due to careless vaccination. Bovine virus was not used until 1888.

Of the priests, Brothers, and Sisters of the Roman Catholic Church who have daily cared for and worked among the lepers for over twenty years, but two are reported to have contracted the disease, Fathers Damien and Gregory, and of the physicians and officers of the board of health it is not known that a single one has acquired leprosy.

HEREDITY IN LEPROSY.

Heredity apparently plays an unimportant part in the spread of leprosy. Of all the children born of leprous parents, either one or both, few have developed the disease in later life, when they are taken away from the settlement in early infancy, as is usually done.

FISH AS RESPONSIBLE FOR PROPAGATING DISEASE.

The theory of Hutchinson and others that a fish diet is responsible for the disease is not borne out by facts as they exist in Hawaii. The Hawaiians' national food, fish and poi (taro), have constituted the principal articles of diet from time immemorial, and as there is no previous record of leprosy on the islands prior to 1848, fish can hardly be held responsible for the disease or its propagation.

DOCTOR ARNING'S INOCULATION EXPERIMENT.

The case of the criminal Keanu, who was under death sentence, and who, being given the option of allowing himself to be inoculated with leprous matter for scientific purposes by Medical Expert Arning and spend his remaining days at the leper settlement or have the death sentence executed, readily chose the former. After an interval of about two years leprosy developed, but it is contended that the experiment is not positive proof that the disease arose from the inoculation, as three of his near relatives became lepers and died at the settlement. This fact is positive—that if the disease were readily communicated, the number of lepers in this territory would be very much greater, especially if mosquitoes or other insects played any great part in transmitting the disease.

HOME LIFE AT THE SETTLEMENT.

It has been the plan of the board of health to provide as fully for the wants of the inmates as practicable. Instead of establishing large hospitals in which the people should be quartered, the plan has been to have them reside in separate cottages and establish homes, but in the case of those far advanced in the disease and helpless, homes have been established for their care. There are almost 450 houses in the villages of Kalaupapa and Kalawao. There is a home for girls, which was endowed by Hon. C. R. Bishop, and is in the care of devoted Sisters of the Roman Catholic Church. A similar home for boys, endowed by Hon. H. P. Baldwin, is under the care of self-sacrificing lay Brothers of the same church.

Caring for these people and supplying them with things necessary for their subsistence and comfort requires the attention of a superintendent and corps of assistants. A common-sense ration list is provided, composed principally of meat, taro, rice, bread, flour, and an abundance of milk; also a store is maintained, at which goods are furnished at nearly cost price.

Dr. W. J. Goodhue, the medical superintendent, gives his whole time to the care of the sick, and all is done to render the condition of the unfortunates as bearable as possible. Churches and schools are maintained, and Kalaupapa and Kalawao have the appearance of well-regulated and not unattractive villages.

Although the decision of the board of examiners is practically a sentence of life imprisonment, the patients after once arriving and being assigned to their quarters have a very great degree of freedom. With the exception of the right to leave the settlement, they go and come as they please and can engage in any lawful occupation. Many of those who are able physically are employed by the board of health to carry on necessary work. They are very fond of athletic sports, horse racing, base ball, etc. There is plenty of musical talent, and besides two brass bands there are several musical clubs.

LEGAL STATUS.

Under the law the board of health is supreme, and the authority must of necessity be in a large measure arbitrary and final; yet the people confined there have their constitutional and legal rights protected.

With all the changes in the Hawaiian government in the past—monarchy, provisional government, republic, and Territory—the care of the unfortunates at Molokai has ever received the earnest thought and attention of the legislature. Many questions taxing the brains and hearts of those charged with the execution of the law have arisen and been solved in a manner productive of peace and harmony in this unique community—a little world by itself.

REPORT OF MEDICAL SUPERINTENDENT.

To describe the treatment of cases as carried on at the settlement, I attach the report of the medical superintendent to the board of health for six months ending June 30, 1903:

"Having had charge of the medical department less than a year, I will not attempt in this report to give you anything but a synopsis of the actual work done for the amelioration of those unfortunates, but reserve for the eighteen months' report a record of careful observation instituted and valuable data accumulated, as well as the results of a special treatment, which, still in its experimental stage, gives promise of doing great good.

"Besides the old dispensary at Kalaupapa, which has been greatly improved and enlarged, two new dispensaries have been fitted up, one at Kalawao and another at Makanalua, in the middle district, which are kept open every day for the greater convenience of people in those districts requiring medicine or treatment. A surgical department has been added to the Kalaupapa dispensary, where an assistant has been especially trained to attend to dressing of sores, burns , and minor post-operations.

"Surgical rooms have also been added to each of the three homes, where assistants are in attendance and necessary operations may be performed and minor surgical ailments antiseptically treated.

"The following is a statement of the number of patients treated and prescriptions filled for the current six months, the itemized daily record of which I have on file in my office:

Cases treated at Kalaupapa dispensary and settlement	6,720
Prescriptions filled at Kalaupapa dispensary	14,600
Patients treated at Bishop Home	2,000
Cases treated at Baldwin Home	4,000
Cases treated at Bay View Home	2,300
Cases treated at Kalawao dispensary	800
Cases treated at Makanalua dispensary	350
Total number of cases treated for the period	20,770

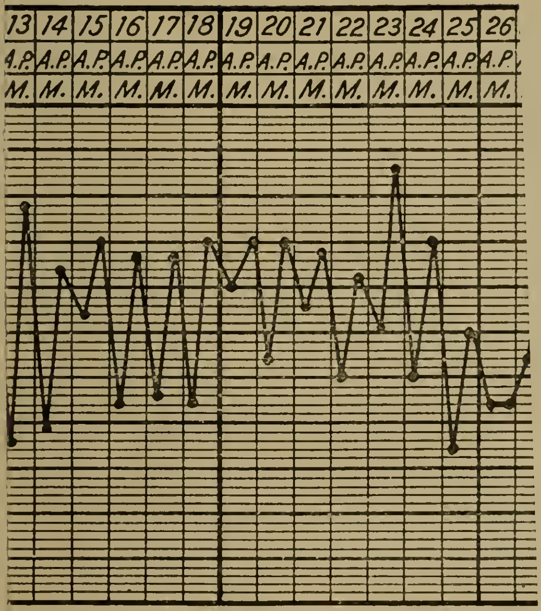
"By a careful survey of my daily record book I find that the ailments most prevalent in the settlement among the lepers are the following, viz: Gastro-intestinal fermentations; indigestion, with gastralgia; biliousness, with torpid liver; headache and anorexia; fevers of the influenza type, with cough, pain, and general malaise; bronchitis, with asthma; diarrhea and dysentery; catarrh of nose and throat; and parasitic itch, due to the ravages of the acarus, and for which unguentum sulphur. and liquid stryax are specifics. But here the troublesome ailment which causes more suffering than the leprosy, while ordinarily simple and readily yielding to proper treatment, is complicated by a peculiar irritability of the skin, aggravated by finger-nail scratching and infection, and in most of the cases resulting in an exzematous dermatitis of exceedingly intractable character. It is the intention of the superintendent to construct suitable air-tight compartments where clothes, bedding, etc., may be thoroughly fumigated, thus preventing reinfection, when we hope to eradicate the evil and thereby relieve much unnecessary suffering. This ailment is most common in the Baldwin, Bishop, and Bay View homes, where bathing and fumigation of clothes and bedding and disinfection of the rooms will be made compulsory.

"Leper fever is not very common, but it is very fatal, owing to its prolonged high temperature and exhausting character.

"I herewith inclose a chart of a very typical case showing the temperature curve.

"A very large proportion of the lepers are troubled with plantar pedis ulcers, and ulcers in other localities due to necrosed bone and the consequent necessity for its discharge. In many cases before an exit is found for the products of decomposition severe inflammation and lymphatic and glandular involvement take place, causing severe suffering, not in the affected part, which is almost invariably anesthetic, but in the contiguous inguinal and axillary glands. My method of relieving these cases, which has never been attempted in the settlement before, is to make free incision and remove all necrosed bone, suturing the wound with the exception of a small opening for drainage. Out of 163 such operations I have succeeded in completely healing all but 5 cases with the first operation, and I would here call attention to the wonderfully rapid healing which takes place in any operations performed upon lepers, and which is probably due to the abundance of fibrine found in the blood of these unfortunates.

"Besides operations for the relief of ulcers and bone-necrosis inflammation, I have removed a great many disfiguring and painful tubercles, and find the same kindly union of the divided tissues frequently by first intention. I have also



kai; disease, leprous fever.

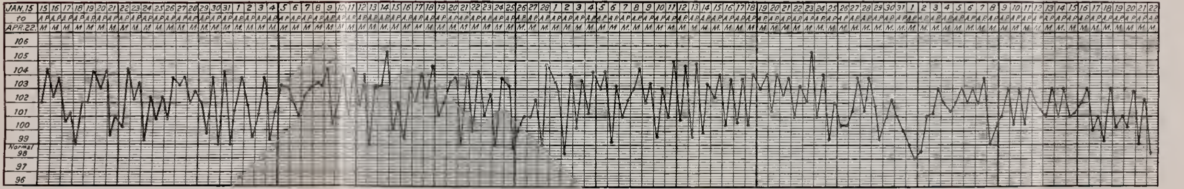


CHART SHOWING TEMPERATURE CURVE OF LEPROUS FEVER.

Name, Elikapeka, nationality, Hawaiian, sex, female, age, 19, residence, Kalaupapa, Molokai; disease, leprous fever.

observed as a result of the excision of large tubercles that the individual's health is greatly improved, owing, no doubt, to the removal of teeming hordes of bacilli, which would later reenter the system, as well as the ptomaines engendered and products of decomposition. In fact, from my observations so far, I will go further and assert that I believe a measure of great prophylactic value against an attack of leper fever—which is nothing more nor less than the general dissemination and feverish activity of the bacilli throughout the general system and their probable invasion of internal viscera—is the excision of the more prominent and painful tubercles.

"Regarding the therapeutic treatment of leprosy, I would state that while we have a great many thrifty tua-tua plants this treatment has been a disappointment, and after a thorough test of it I am convinced that it is of no value whatever; but as your honorable body has my full report on this treatment, I will not go into further details.

"The 'Goto treatment' still has a great many advocates among the lepers, and the fresh supply of Goto medicines which the board has authorized the superintendent to order is anxiously awaited. Personally, I believe there is little, if any, virtue in the ingredients used in the Goto medicines, but that the benefits derived result almost altogether from the systematic hot-water bathing which this treatment necessitates. That the remedies are not scientifically compounded is shown by the fact that all the sulphur used in the bath medicine is precipitated at once by the water and is consequently wholly inert. In this connection I would state that it is my intention to experiment with a bath medicine composed of a decoction of eucalyptus leaves, to which is added a soluble preparation of sulphur, with a view to supplant the Goto medicine with something superior.

"The president of the board of health having authorized me to purchase a complete 'violet ray' apparatus; this treatment, rendered famous by the Copenhagen Institute, will be given a thorough trial for the benefit of our unfortunate fellow-sufferers.

"In sodium cacodylate, an arsenical derivative of relatively slight toxicity, containing over 50 per cent of arsenic, I believe I have found a remedy of great promise in the treatment of leprosy. My attention was first attracted to the remedy by clinical reports of the success attained with it in the treatment of psoriasis and in diseases in which wasting and disassimilation are marked features, although I can not find any account of its ever having been employed in leprosy. It is administered hypodermically, per os, or through rectal enema, and it appears to be entirely free from any appreciable irritative effects on the intestinal or rectal mucosa. I have a limited number of patients on this treatment, who, so far, after being on the treatment from two to three months, show very decided improvement, and I am only waiting a large supply of the drug before materially increasing the number of patients, when I hope to submit a detailed and favorable account to the board of health of the results obtained.

From observation of the general condition of all the inmates of this settlement at the present time and careful comparison with their condition and types of the disease ten years ago I am forced to the conclusion that the disease has assumed a milder and modified form in its general characteristics and virulence, although I note with sorrow an unmistakable increase in the number of leprous sore eyes and blind people. A dormitory especially constructed for the comfort and convenience of these sightless ones would add greatly to their happiness and chances of successful, or at least palliative, treatment, and I understand that the superintendent has the construction of such a building under advisement; and, should the funds be available, his supervision will be a guaranty as to its comfort and practical utility.

"For the statistical benefit of the board of health and medical science generally I am taking a complete history of every leper in the settlement, recording the personal and family history and clinical aspects of each case, with photographs illustrative of the more interesting cases, the same to be recorded in permanent form in several large folios for the purpose.

"The climatic condition of the settlement is ideal, and a noticeable improvement can quickly be observed in the more debilitated patients arriving here from Kalihi receiving station.

"Thanks to the foresight and experience in such matters of Superintendent McVeigh, the hygienic surroundings and conditions in the settlement have been greatly improved, leaving little to be desired in that line, while I have to record the great assistance I have received from the superintendent in the dietetic treatment of the numerous fever cases through his causing them to be supplied with abundance of fresh milk delivered at their doors."

SCIENTIFIC INVESTIGATION.

The board of health has a limited amount of data of scientific value as to the results reached by the personal research of medical scientists employed by them. Within the last few years the board has insisted that all data collected by physicians in their empoly should be the property of the board. Arning, of Germany, one of the most prominent men ever employed on the medical staff for the investigation of leprosy, refused on leaving the employ of the board of health to leave any record of his investigations, thus depriving the board of records that might be of much scientific value.

A bacteriological laboratory was established at Kalihi receiving station and equipped with modern appliances, but the years of indifferent experiment and research for a cure availed nothing.

Until the advent of the present medical superintendent at the settlement, nothing much of scientific value has been accomplished at that place. Doctor Goodhue is an enthusiast in his work, but the immense amount of daily general routine practice leaves him little time for original scientific research.

Bacteriologist and Pathologist McDonald has also rendered valuable service to the board.

CONCLUSION.

It is necessary to understand the situation in the Hawaiian Islands in order to appreciate their sanitary and financial relations to the remainder of the Union.

Lying near the center of the Pacific Ocean and in the direct line of commerce and travel to the Orient, the Philippines, and Australia, and being the port of call, we are obliged to guard against epidemics from the four quarters of the Pacific. The Territorial board of health, working in conjunction with the United States Public Health and Marine-Hospital Servic, is thus protecting the public health not only of the Territory of Hawaii, but acts as a barrier to the transmission of epidemics to coast ports.

We are eight scattered islands with but two or three harbors in the group.

No just comparison can be made between the demands on our public purse and that on the States unless conditions are considered.

By annexation we lost a large part of our revenues which now go to the Federal Treasury, and to its relatively undue profit. Our public requirements are beyond our means.

We do not pretend to solve the constitutional or legal points relative to Federal revenues as related to the Territory of Hawaii, but the existing conditions, we believe, justify us in asking:

First. That as our climate is peculiarly favorable for the treatment and hygienic conditions of leprosy, and as our settlement contains the greatest range of subjects in all stages of the disease, the United States Government promptly establish at the settlement a station for thorough scientific investigation and research of this dread disease, under charge of the best qualified specialists.

Second. That, having established such a station, the Federal Government shall consider its duty toward at least aiding the Territory in caring for these unfortunates.

These two objects would require but a small share of the net profits accruing to the Federal Treasury from the Territory of Hawaii.

Should the Federal Government eventually decide to take entire charge and control of the leper settlement on Molokai, the citizens of the Territory would object, and vigorously protest against its being made a national leprosarium.

The introduction of a strange and uncongenial element in this peaceful abode, which would necessarily differ in language and habits from the Hawaiians, would also offer a most serious objection. Furthermore, it would be a cruel thing to the great majority of those afflicted with the disease in the mainland to be transported from 2,000 to 5,000 miles from home to practically a foreign land and forced into confinement under strange conditions with people whose language, food, customs, and habits are different.

The objects I have presented, I trust, will have early and favorable consideration.

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Biological
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Public health bulletin

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